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A Little Tour in Spain

Ronda

Photographs by the Author

THERE is more than a touch of the melodramatic about the little town of Ronda. Its fantastic setting is superlatively theatrical. The mountains which ring it around were the familiar haunts of the evil companions of Carmen; and poor little Michaela who followed her lover into their fastnesses must have trembled with fear every inch of the way. They are mountains of the most consummate stagecraft, and the town itself seems quite appropriately to have been designed by a race of scene painters. The chasm which splits it in two is like a scar marking the fury of Titanic forces, and anything prosaic in the presence of so much evidence of natural violence would be inept. It is true that the *vega* surrounding the jagged rock on which the town is built is fertile and assiduously cultivated; but even the marks of farming appear bizarre and unreal. Looking down from the cliff, the vineyards and bent olive trees seem painted as though to give a texture to the land which the economy of nature had denied.

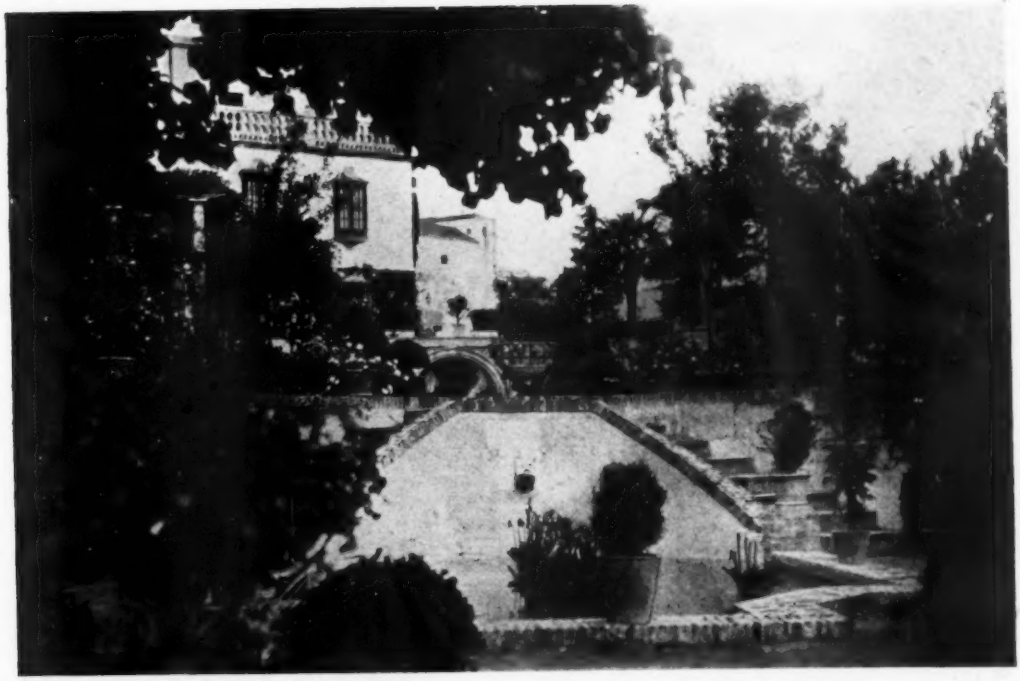
There is no lure of great architecture or great history to draw the traveler to Ronda, but the instinct in us which invites fairies and thrills to ghost stories, which loves swashbuckling plays and the tales of Stevenson and Conrad, responds to the rumors of its romantic aspect. The English come up from Gibraltar or Algeciras and are gravely entertained. For their comfort a delightful little hotel has been built on a jutting promontory looking toward the rugged circle of silvery mountains, which make a sort of amphitheatre or colossal bull ring round the plain. Twice we made the journey from Seville. The first time the adventure had all the attributes of a halting and amateurish rehearsal. The train was late in starting, it stopped at unexpected places and for unexplained reasons. Perhaps the director writhed in the wings. But we were reasonably patient. Finally, long after lunch time, we reached Bobadilla, the junction point where we changed trains with hope refreshed. We waited, and waited, and waited while a stream of stage hands slowly but incessantly passed, carrying little packages forward to the baggage car. A truck would have done the work in half an hour, but it was dusk before a penny whistle blew and we lurched forward. We must have gone twenty of the remaining forty miles without faltering and our glee was heartfelt and exuberant, when all of a sudden we stopped in the middle of nowhere. A Spanish gentleman in our compartment, with commendable native pride, showed his chagrin and disgust at the misbehavior of our transport and proceeded to do our swearing for us with such fervor and variety of tone and gesture as to create in our hearts a high regard for his personal efficiency. And, sure enough, the whistle blew again and we began to move once more. It was now pitch black outside, but presently the sky was cracked open by a bar of lightning that made everything seem white, and out of the opening poured such a torrent of rain as would have made even Noah despair. We advanced fitfully, the lightning flashing wilder and the thunder detonating more sharply every minute until in one final crash and burst of flame we came to a standstill once more. We had reached our goal, the end of the first act. Belasco never contrived a finer climax. We stumbled onto the platform and a muffled figure pushed us into a cab; we had no volition, we were numb. We felt the horses plunge forward. The blackness of the cab was no blacker than the sky, no blacker than our ignorance of the next turn in the plot. But after a few splashing moments our coach stopped with a jerk and dim figures holding candles welcomed us with English voices. The candles guided us to a small drawing room, where a fire was burning briskly. There were comfortable chairs and copies of *The Spur* and *Country Life* on the tables.

RONDA—SANTA MARIA DEL MAYOR

Two tall glasses on a little stand gave us our cue. At the Reina Victoria the whiskey is of the best and the Scotchest.

Strange to say, though it may only appear an unimportant coincidence, Scotch was promptly brought to us on our next arrival at this admirable hostelry. On the second occasion we needed it because we were dry and it proved equally efficacious. The proper way to go to Ronda from Seville is to drive. Junction points in Spain, like Bobadilla in the south and Medina del Campo in the north, are to be avoided at any cost. Spanish trains simply do not correlate. Inured to the obstinacy and leisurely gait of the "burro," the Spaniard remains placid in the face of delay, but we found it hard to emulate his patience. Therefore, we chose to motor, and in less than four hours we achieved with ease the journey which the railway had taken eight to accomplish with difficulty. We missed, of course, the lurid conversation of our fellow passenger during the first wild ride. But we realized that he was only showing off. He would probably have been docile enough but for our presence. We missed, too, the hysteria of the elements, but were compensated, as we wound in through the gorges and climbed the defiles leading toward the rocky crest on which the town is built. The posture of the mountains was magnificent, notwithstanding the fact that they seemed a trifle self-conscious of the romantic effect they were producing. Besides, it rained later after the cockles of our hearts had been properly warmed and when we were feeling the mellow after effects of an honest and properly garnished luncheon. From the little terrace of the hotel we watched the clouds break against the mountain tops, and when the sun began to shine through the slanting curtain of the rain across the valley, they told us we could venture forth, secure in the faith that it wouldn't rain any more until exactly the same hour next day. The month was May, and so punctual was the performance that the natives might, if they had any use for watches, have set them by the daily deluge.

In the sunshine the white houses glistened, the moisture painted their tiles a little brighter and the dark



RONDA—GARDEN OF THE CASA DEL REY MORO

RONDA—GARDEN OF THE CASA DEL REY MORO

RONDA—EL PUENTE—THE HIGH BRIDGE ACROSS THE "TAJO"

cypresses clinging to the sides of the "Tajo," as the great rift in the town is called, were rich and waxy against the sky. The bridge that spans this deep chasm, the bridge which has been sketched and painted so many times, is, of course, the chief feature of the *"mise en scène."* It is modern, having been built to connect the old and new town in 1760 or thereabouts. It is very short and its center arch is inordinately high and narrow, the gorge being over five hundred feet deep and less than half as wide. The "Puente" is buttressed by the stony walls of the canyon and its effect is spectacular in the highest degree. To the crest of the cliff-like wall of the ravine cling straggling little white houses, huddled together as though holding hands for safety. Some have small terraces projecting as far as possible, their walls merging with the walls of the precipice. From the windows of others a cigarette might be dropped straight down to the bed of the tiny stream below. They are all charming little houses of the most informal and nonchalant design, and they fringe the abyss with an effect of the most serene effrontery.

The old town built by the Moors on the site of the Roman "Arunda" lies to the south side of the cleft, and other but lower bridges dating from these early settlements span the "Tajo" further up its course. Toward the lower end of the old town fronting a little open place, called the Plaza del General Weyler when that hero's fame was at its highest, rises the church of Santa Maria del Mayor, originally a Moorish mosque, and still retaining vestiges of its first character in spite of its Gothic aisles and Renaissance choir stalls. Its graceful belfry and the curious double gallery built across its front give it a personality more interesting than that of many a more grandiose cathedral. In the white walls of the old convent which stands nearby forming an angle of the Plaza are pierced stone lattice windows of Mohammedan origin. The great Moorish relic, however, to which every child in the town will direct you, is the Casa del Rey Moro which stands not far away on the edge of the ravine. Whether or not it was the house of a Moorish King, I do not know, but now, charmingly restored, it belongs to a great Spanish lady, the Duchess of Parcent. The Duquesa's benefactions to the little town have all but obliterated the memory of General Weyler, and the Plaza, which formerly bore his name, is now called after her. Behind a high wall and in the nar-

RONDA—"ROOF LINES"

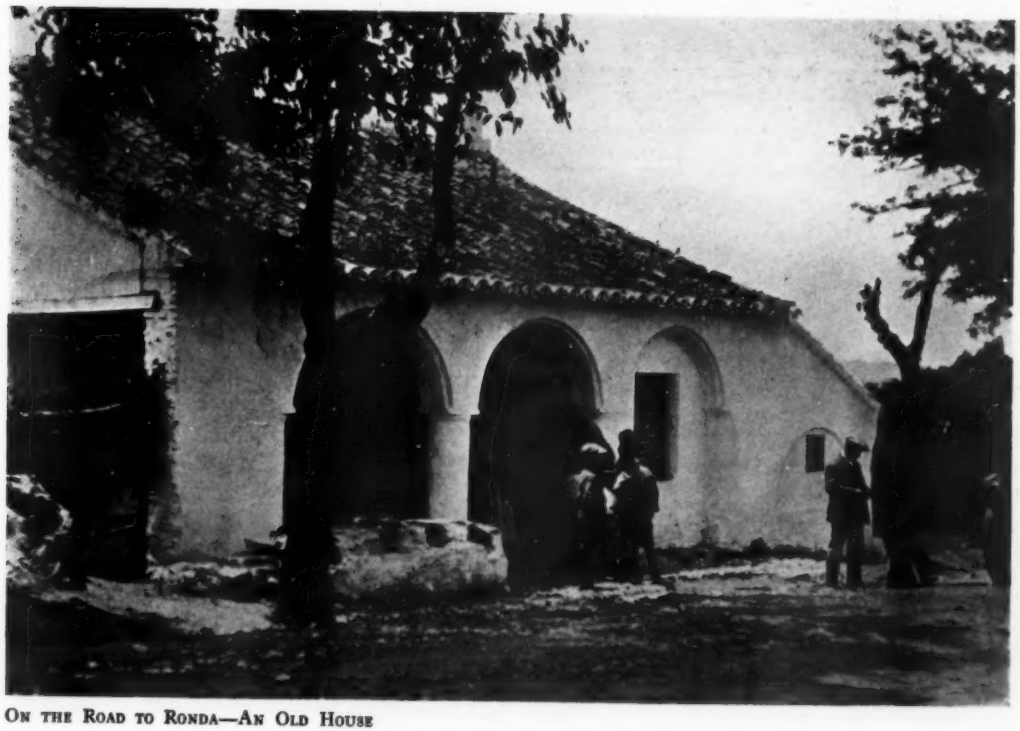
RONDA—MOORISH HOUSES ON THE GORGE—FROM THE GARDEN DEL REY MORO

RONDA—SANTA MARIA DEL MAYOR

row space between the street and the brink of the precipice she has restored and renewed the garden of the mythical Rey Moro. The Bynes have described it in their book on Andalusian Gardens, and elsewhere they have illustrated some of the details of the house and its furnishings. It is a diminutive garden but its levels are so cleverly manipulated and it commands such superb views of the gorge, of the clustered town, of the *vega* and of the mountains that its interest is boundless. In its details it is not perhaps impeccably Spanish, but the short pergolas made of Roman fragments and other slight anachronisms only add to its charm. Here as in the hillside gardens of Granada are combined the intimate sense of privacy felt in a small and discreetly furnished room, together with views of such variety that they pique the imagination and charge it with rich and romantic fancies. The mountains have an ever changing color and are no two days alike, nor alike even in any two hours of a single day. The gorge makes a bend or sort of elbow so that other Moorish houses which stand close by the Casa del Rey Moro are seen as well as the white walls and tawny roofs of the houses across the chasm. Two or three churches which the Moorish King did not see raise their ancient belfries above the roofs. But that he feared the power which would raise them is certain, for to safeguard his little citadel against siege, a staircase of three hundred and sixty-five steps was tunnelled through the rock to the bed of the rivulet far below.

A strange, almost uncanny silence hangs over Ronda, appropriate enough to a place whose ancient industry was smuggling. The mountains lend themselves to the thrilling game of hide and seek, and contraband tobacco is offered for sale more openly here than elsewhere in Spain. The days of brigandage are gone but many a robber's nest lay hidden away in the hills not so very long ago. The men of Ronda were ever famous horsemen, and during the last war they waxed prosperous breeding fine horses which they sold to both combatants with commercial impartiality. The waters of the Guadalevin turn two or three small flour mills,

RONDA—ENTRANCE TO THE BULL RING



ON THE ROAD TO RONDA—AN OLD HOUSE

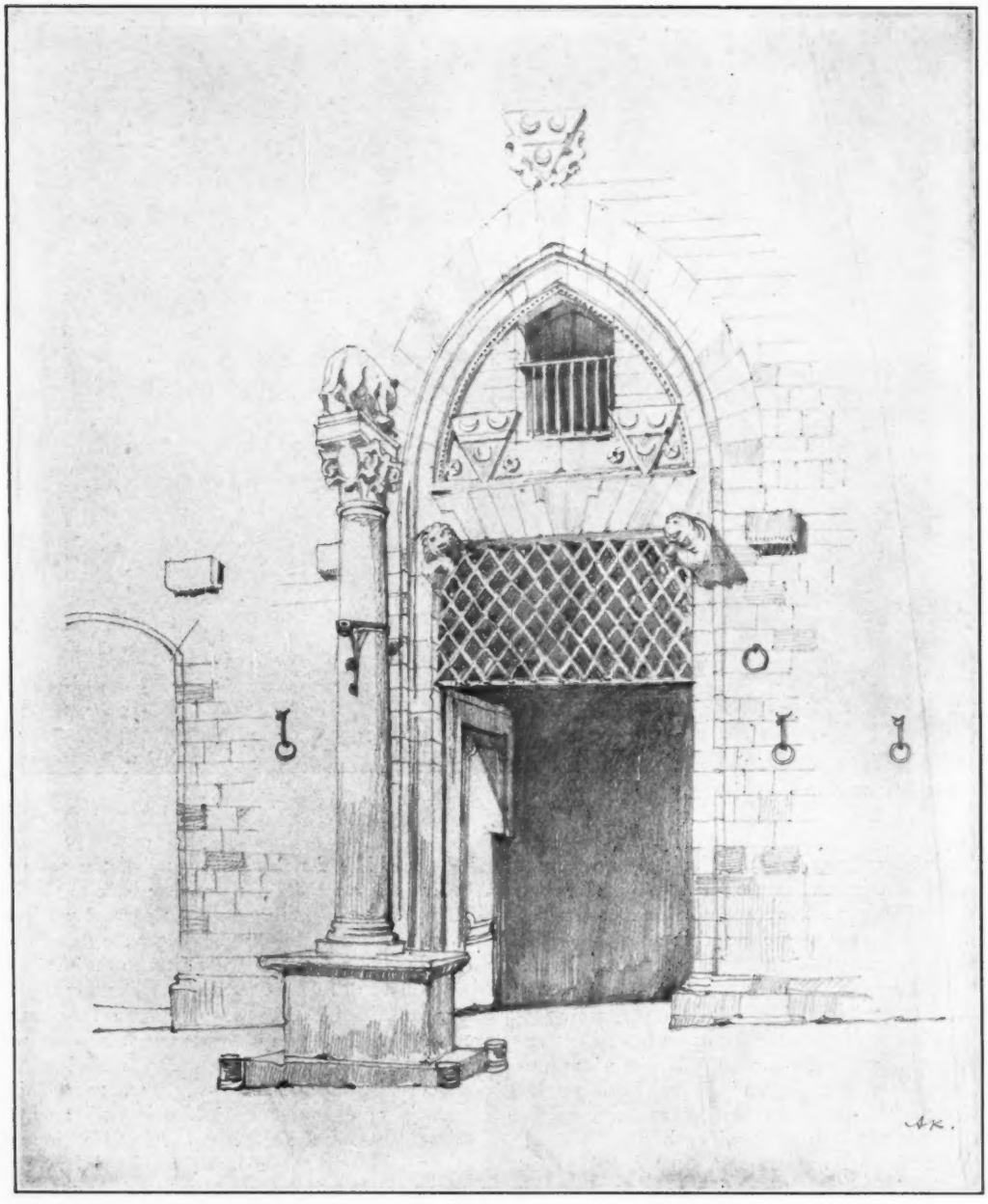
RONDA—PANORAMA FROM THE GARDEN DEL REY MORO

RONDA—THE UPPER PART OF THE BRIDGE

ON THE ROAD TO RONDA

and this industry, together with fruit growing, keeps little caravans of mules coming and going, threading their way delicately along the precarious paths which wind down the face of the cliffs. Ronda is a place to idle and dream. Though the stage is set for drama, picaresque, fantastic, intense, the actors lurk in the wings. We prowl around at will through narrow passages, coming on forgotten bits of scenery and properties that would make the fortune of an American producer. Supernumeraries cross back and forth, priests, peasants, caballeros. Prima donnas languish behind grilles, tenors ride by with clanking harness. Up on the terrace of the Reina Victoria, English ladies read novels and enjoy the salubrious climate while the wives and families of officers wait for the Spanish armies to win a victory in Morocco. It is beautiful but *triste*. One listens for the thunder and welcomes the swish of the rain like the first tuning up of the orchestra. Always in our wanderings we came back to the 18th century bridge. Leaning over the parapet we looked far down into the spray breaking over the rocks below. Gingerly we clambered down almost to the river's bed to taste the full force of its height. Directly over the centre arch and below the parapet, a little barred window gave light to a chamber which in other times was used as a prison. The culprit's food was let down to him from the footway by a rope. What ingenuity could have availed him in such an eyrie? They told us that the architect had lost his life in the building of his bridge, and we wondered how many nameless workers had plunged to death in the depths of that sluice. Yes, Ronda is a little *triste,* but very beautiful.

LOUIS LA BEAUME.



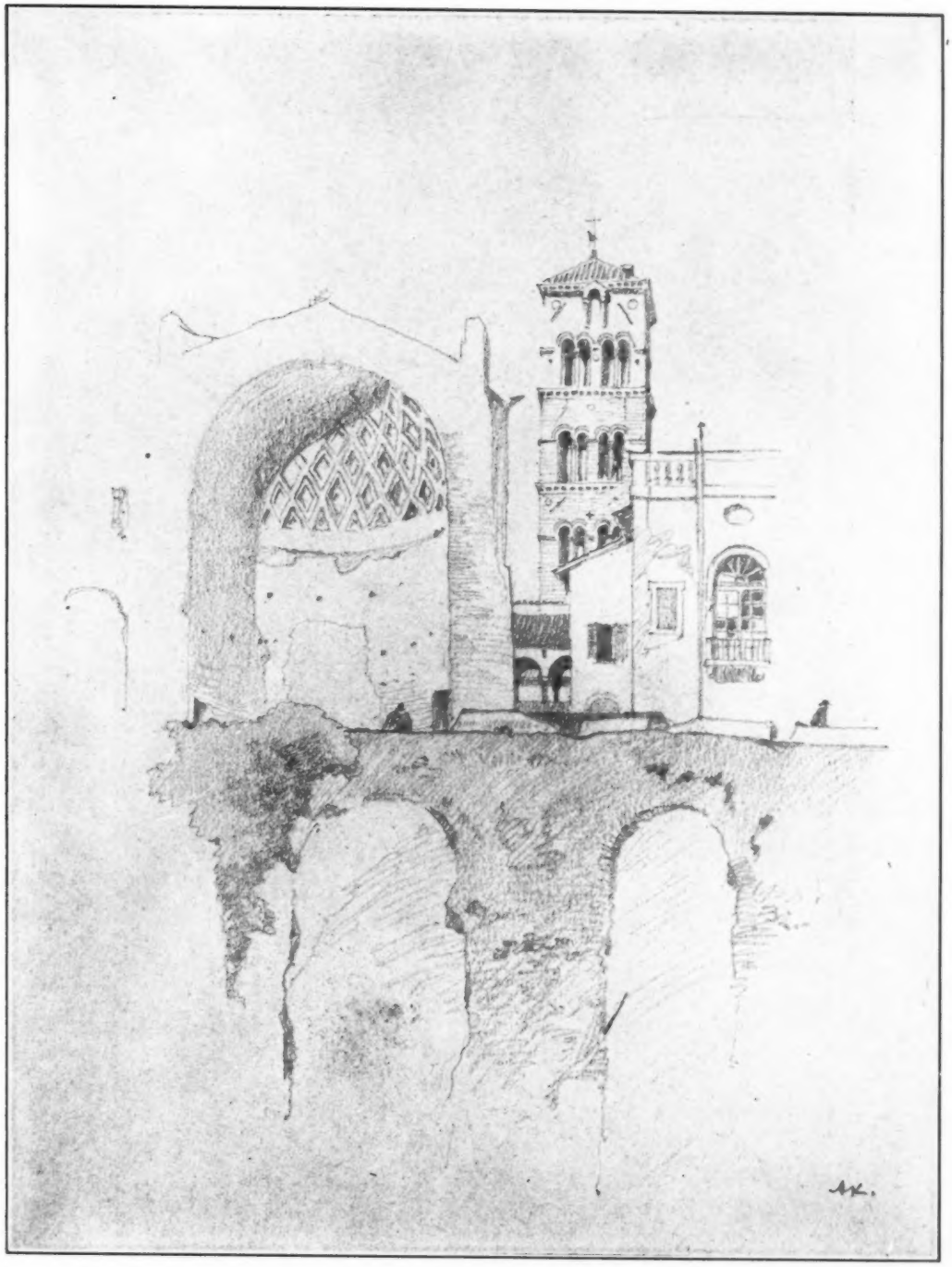
Five Sketches

By Albert Kahn

Siena

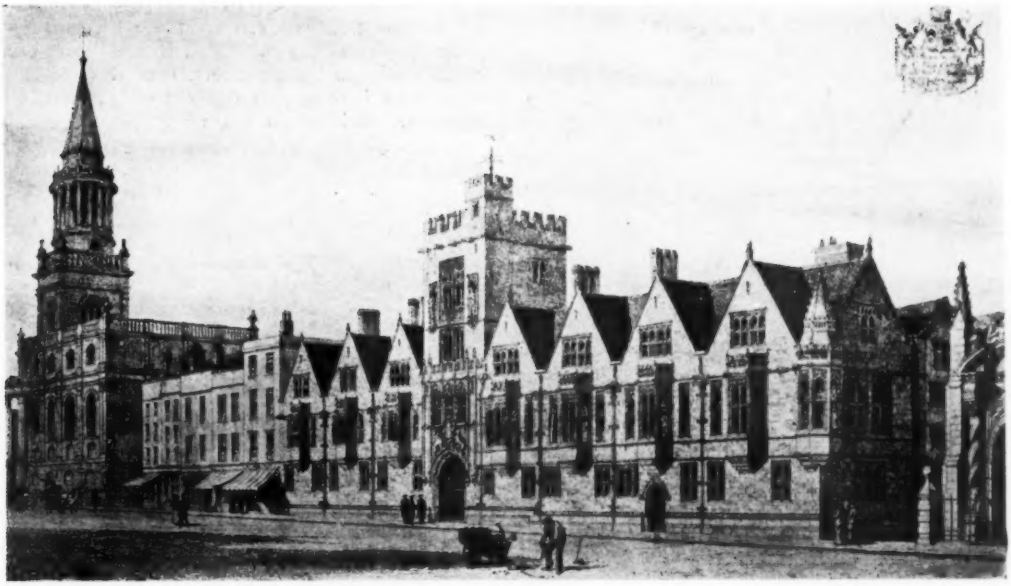
San Francesco Assisi
Albert Kahn

MORET—TOWN HALL
Albert Kahn



Rome
Albert Kahn

S. Maria in Trastevere
Albert Kahn



BRASENOSE COLLEGE, OXFORD: THE NEW FRONT TO THE HIGH
THE LATE SIR THOMAS GRAHAM JACKSON, R.A., *Architect*

From "The Architects' Journal"

From Foreign Shores

The Penny Loaf

THIS CAPTION only by the direst stretch of a distorted imagination can be connected up with the idea which presents itself to my mind as I scan the leaves of various of the publications wafted recently to my desk from Foreign Shores. First as to the loaf: who could surmise that I am picturing in my mind fragments of stale bread, or, for that matter, of perfectly fresh bread, returning after not so many days, having been cast upon the tumultuous waters of a vast architectural ocean? And, going backward, like a crab, whose disposition so many reviewers are apt to emulate, we come upon the quantitative (in this case qualitative as well) penny—the proverbially bad penny, which, like the bread cast upon the waters, is so inevitably destined to return. Perhaps the connection is not yet clear to the simple mind and I shall complete the diagram. French, Spanish-American and British publications bring to me page upon page of architectural literature and architectural design originally broadcast from this Land of the Free, and now sent back home to roost—as if we hadn't already of it a genteel sufficiency. But, upon further thought, perhaps it wasn't reproduced for our especial benefit and what we are getting is only an echo of what it is doing "over there" eastward, and "down there" southward. But in some cases it is *some* echo!

Br-r-r-r-r (Accompanied by a Shiver)

But I'd hate to have the mean disposition—that is, there" southward. But in some cases it is *some* echo! *Statesman's* reviewer, quoted in *The Architectural Association Journal,* London, September, 1924. Just listen to him: "Our architects have been living in a Fool's Paradise to which no one but themselves is admitted. They are allowed to put up atrocious buildings which are an insult to the community without one word of open criticism. Some fantastic, anti-social, and immoral system of etiquette prevents, we believe, professional architects from publishing unfavorable opinions of work done by their contemporaries; the layman has long since been reduced to the silence of despair; and a building like the new Lyons Corner House can be bared to the public gaze without anyone expressing, in print, what must be the opinion about it of every educated person. Mr. Shaw has exposed the Trade Union of doctors; the Trade Union of architects still securely walks the primrose path. In England architects can be divided into the academic and the uneducated; and the two classes often seem to overlap. Imagine what the condition of painting would be if there were no painters except pavement artists and those who exhibit in Burlington House, and you will then be able to walk down the new Regent Street without astonishment. But the aggressive vulgarity of most modern buildings is goading the public to take in self-protection some interest in architecture. A new club, a new review, a book by Mr. Charles Marriott, a book by Mr. and Mrs. Williams-Ellis, and now the admirable series of monographs which Messrs. Benn are publishing—if this alarming publicity continues, the general level of taste will be raised, and some of our most eminent architects will find themselves unemployed.

From "The Journal, R. A. I. of Canada"

SASKATCHEWAN HALL, UNIVERSITY OF SASKATCHEWAN
DAVID R. BROWN & HUGH VALLANCE, *Architects*

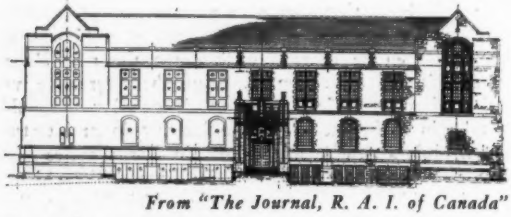
So marked indeed in some respects has been the improvement in the art, that descriptions of its present condition are beginning to show a most unwarranted complacency. If a writer can spell correctly and knows his grammar, we do not, therefore, assume that he is a genius. But the existence of a few buildings which are scholarly and free from vulgarity seems so astounding that people talk of a 'Renaissance of Architecture.' So low has fallen this noble art."

Then our reviewer (who has shown himself no lady!) takes up Mr. Lanchester's book on *Fischer von Erlach* with such apparent knowledge and understanding as to warrant the assumption that he was not of the laity. Though were he of the profession I should feel that he had wasted much, too much, time in acquiring such a store of erudition—or even in cribbing it from the encyclopedia. But our reviewer, lady or gentleman, of the laity or the profession, seems to have sized up the situation both in the case of Von Erlach, and in the case of a firm of great American architects whose work has recently been "monographed" by Professor C. H. Reilly of the Liverpool Architectural School.

Our reviewer, speaking of the subject of Mr. Reilly's monograph, says: "They were, in fact, the high priests of the genteel tradition in American architecture, and Professor Reilly, who nurses the parallel tradition at Liverpool, was obviously born to be their apologist."

Main Street, U. S. A.

Main Street was supposed to run from Albany, New York, to Denver, Colorado, was it not? Well, the new Regent Street, if one can trust the evidence of these gatherings from Foreign Shores, is much more extensive longitudinally and transversely, extending, as it would seem, from London to Tokio and embracing the North American continent on the way. Now and then its æsthetic skyline is broken by a projecting peak, but in general it holds its deadly monotony of numbness.



From "The Journal, R. A. I. of Canada"

UNIVERSITY OF SASKATCHEWAN:
PHYSICS BUILDING—FRONT ELEVATION
DAVID R. BROWN & HUGH VALLANCE, *Architects*

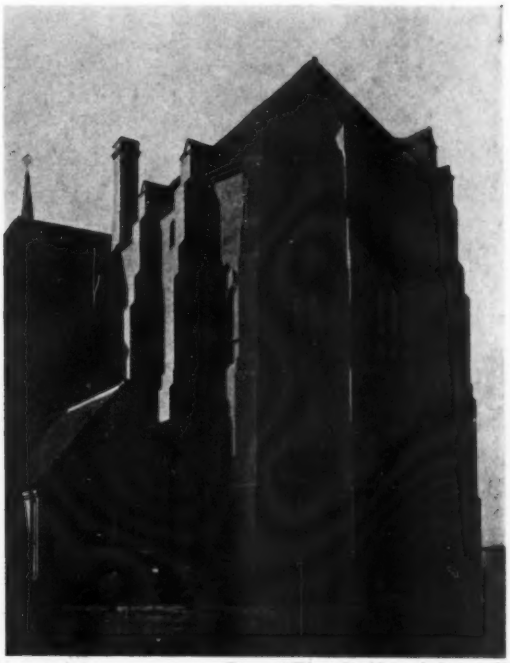
From "The Journal, R. A. I. of Canada"

UNIVERSITY OF SASKATCHEWAN: PLOT PLAN
DAVID R. BROWN, *Architect*

Numbness is the especial characteristic, and numbness must necessarily be accompanied by monotony even in variety. For there is variety in form if not in sensation. There is Gothic and Classic and Romanesque to meet all desired forms of numbness. There must be desire somewhere or the forms would not exist. Desire somehow must be permeating the general spiritual numbness.

From "Architect, Builder & Engineer"

NATIONAL MUTUAL OF AUSTRALIA BUILDING,
CAPE TOWN
BAKER & MASEY, *Architects*
"A LITTLE OF MAIN STREET"



From "The Architects' Journal"

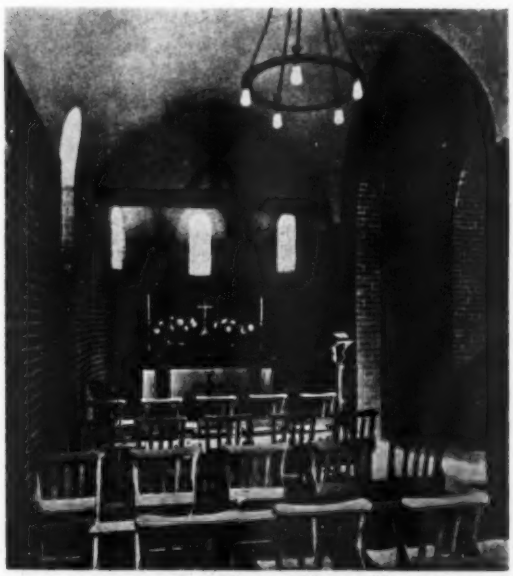
BISHOP JACOB MEMORIAL CHURCH: THE APSE
ILFORD, ENGLAND
HERBERT BAKER, A.R.A., *Architect*

There are the Kiwanians, whose natural expression would naturally be Gothic (would it not?) and the Rotarians, who would find conformable expression in the round arch, and the Elks, the Woodmen, and suchlike who would work in "Orders." But all are animated—though that is hardly the word for it—by the same spirit—the spirit of Main Street in its lesser, of the new Regent Street in its more formal, not to say formidable, aspect. A

From "The Architects' Journal"

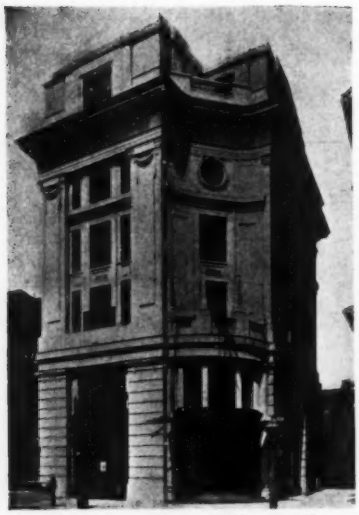
THE NEW APARTMENTS FRONTING ON PICADILLY: THE MODEL

THOMAS HASTINGS & PROF. C. H. REILLY, F.R.I.B.A.,
Associate Architects
"A LITTLE OF MAIN STREET"



From "The Architects' Journal"

BISHOP JACOB MEMORIAL CHURCH: THE CHAPEL
ILFORD, ENGLAND
HERBERT BAKER, A.R.A., *Architect*



From "The Architect"

MESSRS. LIBERTY'S NEW PREMISES
REGENT STREET, LONDON
EDWIN T. & STANLEY HALL,
Architects

From "The Architect"

NO. 326 REGENT STREET, W.
LONDON
MESSRS. HENRY TANNER,
Architects

From "Architect, Builder & Engineer"

SOUTH AFRICAN MUTUAL
BUILDING, CAPE TOWN
STUCKE & BANNISTER,
Architects

"WORTHY OF MAIN STREET"

From "The Architects' Journal"

THE GEOLOGICAL MUSEUM, CAMBRIDGE
THE LATE SIR THOMAS GRAHAM JACKSON, R.A., *Architect*

From "The Architects' Journal"

THE UNIVERSITY, ZURICH: THE TOWER
PROF. DR. K. MOSER, *Architect*

few samples all culled from the Foreign Press are illustrated.

The Poor Greeks

Again, the poor Ancients are having to harbor a lot of Mechanistic and Geometric theories of design and construction coming out of the West, as the poor Moderns are having to shelter the castouts and refugees of the East. In neither case can the Greeks help themselves. They are at the mercy of any individual or race which wants to unload its theories or starving infants upon them. Once upon a time I, myself, attributed certain motives to the Greeks in the development of their æsthetic expression. In that case, however, I considered that the motivating impulse arose out of deep feeling and rich human sentiment, not out of conjured up rules of geometry. But, I am almost sorry now that I ever attributed to the poor Greeks even motives of pure sentiment and humane instincts, so much have they been made to carry in the line of unnecessary, if not of impossible, theories of conception and practice. As I have had occasion to remark elsewhere, it is quite unnecessary to seek the geometric foundations of a beautiful acrobatic "turn" in the air. The curve of the turn being accomplished can be resolved, possibly, by mathematics; but the turn was made in response to a rhythmic spiritual impulse, and to attempt it on any other basis would surely be fatal to the performer and to the performance. Even artistic impulse has on occasion failed to result in perfected accomplishment—all this because of a recent effort of an eminent American architect before a learned French body and published in December, 1924, in the *Journal of the R.I.B.A.*

Castles in Spain

The number of *Arquitectura Española,* Madrid, for October, November and December, 1924, is replete with archæological interest in the text and plates bearing upon "Mudejar Ornamental Work in Toledo." Modern Spanish work is represented in drawings, among others, for a "Scheme for a Palace of Spain in an Exhibition," an interesting combination of Modernism and the Grand Rapids Furniture style of 1876. *El Arquitecto,* Buenos Aires, November, 1924, illustrates quite fully a residence in Kohler, Wisconsin, from the Studio of Messrs. Brust & Philipp of Milwaukee. Dreams, which we hope may not turn out to be merely castles in Spain, are being dreamed by University Corporations in Canada. We show the plot plan of the University of Saskatchewan, by David R. Brown, Architect, and plates of proposed buildings by Brown and Hugh Vallance in an association. Upon the vitality of Mr. Vallance's work I have heretofore had occasion to make favorable comment. Like many of the British and Colonial architects, Vallance seems able to extract from tradition what he needs to carry on the "feeling" and to eliminate forms which arose from functions no longer to be performed. Sir Thomas Jackson, who very recently died in London, was another who could weave forms to his own fancy. A bit of his Oxford work we introduce. Sir Thomas Jackson's was a marked influence during a long and enviable career. Real feeling entered into his buildings; delicacy and refinement were there—not the rawness of Main Street.

Architecture, London, January, 1925, shows us in an article which, fortunately, was not labeled "What the Zoning law is doing to American Buildings," what professional renderers who have slight feeling for design can do to the work of architects who have seemingly but a superficial feeling for structure. The curse of the skeleton type of construction is that it permits designers who, as I have suggested, have slight feeling for structure, to assemble forms which must be sustained by no inhering stress, but which must be held in suspension, as it were, by tortured structure. Anything can be done with the aid of modern structural methods—then why not do anything—however raw? If a form will stand of itself at a sixty-fourth of an inch to the foot, why not throw it up to two feet to the inch and span the magnificently multiplied voids with steel or ferro-concrete? That's about what is being done in our modern work. The formula is to throw up the small thing to an immense size, rather than to create forms appropriate to the required immensity. But I am getting into deep water and will soon, unless I call a halt, be comparing architectural and engineering functioning not altogether to the disparagement of the latter. So I will cease, regretting that I inadvertently disposed of a number of clippings showing examples, culled from foreign periodicals, of American buildings eminently fitted to stand along that continuation of the new Regent Street, London, which is Main Street, U. S. A.

IRVING K. POND.

Truth in Architectural Rendering[1]

WHAT constitutes a *truthful* Architectural rendering? About two months ago a certain manufacturer of terra cotta commissioned me to draw a building in which his product appeared. I proceeded to the site, took up a position before the building itself, and put down on paper as unaffected and truthful a copy of the subject as I was capable of executing.

Upon delivering the result to my prospective purchaser, he stated that it was no good; that, as a matter of fact, it was so bad he could scarcely identify the subject. After extended questioning on my part, I ascertained the nature of the difficulty: I had not shown enough terra cotta. I revised my work, indicating more terra cotta than had previously been in the drawing (or in the building) and he at once pronounced it a complete success.

A month later another manufacturer—in this case of plate glass—commissioned me to draw a building in which his product appeared. It turned out to be the same building I had just drawn for the terra cotta man. Feeling, consequently, perfectly familiar with my subject, I quickly executed a drawing which seemed to me

[1] An address before the Architectural League of New York.

in every way competent. I had again failed; it appeared that this building, which I had innocently believed to be almost all terra cotta, was, when you came right down to it, entirely plate glass! I was forced to the conclusion that a considerable difference of opinion exists as to what constitutes a truthful architectural rendering.

I might be reminded at this point that, in the two incidents described, I had been dealing with commercial minds and not with those trained in the observation of architecture. It is true that a wide divergence exists between these two points of view, and I might mention, in parentheses, that this divergence is of great importance to Renderers—financially! Architects comprehend all the steps involved in our work; we realize that, as they often admit, they would do the drawing themselves if they "only had the time." When we deliver to them a visualization of their ideas there is, in their minds, no element of surprise (however much of disappointment). With laymen, on the contrary, the fact that anyone can suggest in two dimensions something which exists in three has an element of mystery. The point, of course, is this; we charge them for the mystery.

But even among architects, we find that a considerable difference of opinion exists as to what constitutes a truthful rendering; if an architectural voice over the phone says: "Make me a rendering of that building; make it 5½ feet high and send it over tomorrow at half past five," we are as much in the dark as before we picked up the receiver as to what he *really* wants.

It is true that a certain number of recognizable schools of thought on this subject exist:

One is that of Meticulous Accuracy. You are to begin at the ball on top of the flag pole, go down the building, brick-course by course, and, by the time you have reached the cornerstone, you have said about all there is to say about that particular project. The architect is going to take his client aside, unveil this drawing, and say: "Now here's your building; here's where you go in; notice the nice little detail behind that grille; step this way to the elevator; you are now up on the first set-back; (be careful not to trip over that projecting pipe), from here you get a glorious view of every brick in the tower!"

These drawings eminently succeed, yet, to the mind of an unprejudiced observer, they resemble the record which might be left on the brain of a snail which, fond of Architecture, had traversed every particle of the façade and which possessed a perfect memory.

Another school is the Romantic. We are here in a land of pure fancy, inaccessible to crude fact. If the tower is high—make it *High* (make it twice as high). Make the big portal BIG: the people going in are, at ⅛" scale, exactly 4'—4" tall. If there is a slightly unfortunate situation around the side entrance, better plant a grove of cedars in your drawing! If the water tank on top hasn't as much to do with the design as it would if a little more time were available, assume it a foggy day! I dare say that if all the fog which all the Renderers in New York have drawn in all their lives were rolled into one fog, the earth would be without form and void.

Again, there is a school which is difficult to name; a rendering is something, or other, which has an existence all by itself, on paper; it need not resemble *any* building in particular, but—it *must* resemble a rendering. One individual of this school swears by a certain light-blue-air-brush sky and a warm tone, of changeless hue, flooded over the bases of the columns. When this man tells you he wants a rendering—this is exactly what he wants.

Another always pines for something with "pep." In this case you take some unusual piece of paper—something from the waste-basket, and look through the bad corner of your studio until you find a tube of paint which has gone a little rancid. Holding the paper in one hand and the tube in the other, you bring them together with a ZIP.

A third individual of this school swears by nice lines. He holds the drawing an inch from the eye and counts the nice lines. He is going to give it to his client as a present. The client is going to hang it over the mantelpiece in his snuggery. He may even reproduce it as a Christmas card which will undoubtedly be a very nice one. We cannot criticize this procedure, because it is so eminently *nice*.

But the foregoing considerations suggest a deeper one: What, truthfully, is the appearance of buildings?

The terra cotta and plate glass minds, to which I referred, would undoubtedly hold that buildings appear as masses of, respectively, terra cotta and plate glass. I had thought, for the moment, that they wished me to emphasize their materials because of some ulterior motive; no, when these men stood before the building itself they *actually saw* nothing but (respectively) terra cotta and plate glass.

I have known several excellent designers, who, having made all the full-size details for a building, sincerely regard the building itself as an assemblage of full-size details. That a building is a welcomed base for a lot of sculpture is undoubtedly the view held by those sculptors who are not present this evening! To an impressionist painter, a façade is a field which reflects light. The real estate operator sees, clairvoyantly, right through the façade and distinguishes the square feet at $3.75 per foot.

Even architects sometimes see in the three-dimensional result only that for which they longed on the two-dimensional surface of their drawing board; and when they ask for a rendering of their building, what they really want is a rendering of their preconception.

In the midst of this melee of "complexes," it is not surprising that the renderer finds himself in a somewhat uncertain and hectic occupation. We find, however, something exciting in the prospect; it may even be that we will create, somehow, a band of pioneers whose descendants will, some day, make clear to all concerned how architecture really does appear! I must affirm at this point that a rendering which comprehensively tells all the truths about any building has never been made.

Assume that we begin our rendering, as usual, by locating a viewpoint on a draughting board, and translating our plans to a picture plane. If our whole procedure is accurate we will produce an image which will be generally accepted as truthful. How will it compare with the image which the building itself creates for a

man who observes it not with one eye, but with two? How will it compare with the image created for this two-eyed man who continually changes his point of view (as he always does) in observing the building? We have here two truths: One is that evolved from a point on a draughting board; the other, what the mind of a thinking, two-eyed moving man comprehends. Is there any question as to which is the greater, and which the lesser, truth?

Again, assume that we follow the convention of allowing perspective to influence the horizontals of the building, but reproduce the verticals as straight, parallel and (in the picture plane) as high as these are in the blueprint elevations. Our rendering as to heights will commonly be accepted as truthful, but will it convey any of the sense of height which one has when, standing near the base of the Bush Terminal Building, one looks up along those diminishing planes, with a realization of sheer altitude which has never, as yet, been reproduced on paper? For the sake of experiment, I once made three perspectives of the mass of the Woolworth; one was laid out from blue prints; the second, drawn free hand from an exactly corresponding viewpoint in City Hall Park (as accurately as I could measure width and height with a pencil in hand) and the third, a photograph, taken from the same point. These three diagrams were totally dissimilar in proportion. But the fact which struck me was that none of them produced the sensation of height which the building itself produced on the mind.

Again, assume that in our rendering we faithfully represent every incident of the visible surfaces of the building, delineating each window in its exactly correct position and dimension. We will have rendered the truth (as all real estate men will gladly admit) but in all probability we will have failed to make any suggestion of mass, that is to say, of the building itself. We will have simply rendered unto Caesar the things which are exclusively his.

Finally it may be said that most of our renderings, however accurate, are what moving-picture men would call a "still." There is seldom, in our work, a suggestion of that movement which any observant mind apprehends in the majority of masses; little suggestion of the drama which is inherent in our modern buildings, especially as they are juxtaposed in cities.

I realize that there are many who regard buildings as being static,—seen always in their entirety,—always inert masses, and who are gratified to find them presented in drawings which are also static, inclusive and inert. It may be said that they perceive architecture in an arrested existence, lit at the 45 degree angle by a sun which is the color of India ink. This attitude deserves respect; it may even be said that those holding it should be carefully guarded! They should not, for instance, be allowed to go out at dawn, for at dawn the tip of the Woolworth is delineated by the light as a lofty and pristine actuality; yet the base of the building, founded in mist, is scarcely discernible. They would find this discrepancy embarrassing. Similarly, they should be persuaded from going out after dark on a foggy night; the Shelton, though deeply founded in rock, has—horrible thought!—no top at all. To such gentlemen, such buildings say "Boo!" I once knew a young revolutionary who said: "I defy all laws—even Nature's laws!" These gentlemen say: "I dislike all drama—even Nature's drama."

This morning, looking south from the architect's building we saw a single great beam of light,—one positive definite outline,—break through the low clouds and strike the city immediately behind the Metropolitan, making of that tower a singularly strong and dark mass. Only an instant later, this disc of light was upon the tower itself, making it the only illuminated and clarified form in the entire dark panorama.

I hope, Mr. Chairman, that you, yourself, witnessed that incident and will express it in one of your canvases; but I trust that none of the gentlemen to whom I refer were peeking through their encompassing curtains at this moment!

Buildings possess an individual existence, varying,—now dynamic, now serene,—but vital, as is all else in the universe. If we may not, here and now, transcribe this existence in our paintings and drawings, we at least may—we must—choose *some aspect* of the entire truth as our subject. The importance of our work will depend on how we choose. The first duty of any man bent on rendering an architectural subject, is not to strike his view-point nail into his board, but to contemplate his subject. It is not so much *how* we say a thing as *what* are we saying?

HUGH FERRISS.

Marginalia Architectura

"IF WE would know why certain things are as they are, in our architecture, we must look to the people; for our buildings as a whole are an image of our people as a whole, although specifically they are the individual images of those to whom, as a class, the public has delegated and entrusted its power to build.

"Therefore, by this light, the critical study of architecture becomes, not the study of an art—for that is but a minor phase of a great phenomenon—but, in reality, a study of the social conditions producing it, the study of a new type of civilization. By this light the study of architecture becomes, naturally and logically, a branch of social science; and we must bend our faculties to this bow if we would hit the mark."

"—It is somewhat the fashion, in modern thought, to make simple things complicated, to artificialize natural things, and to envelop all in a net of words and *recherché* reasons; to assume, too much, that man lives in a world apart, and that the little thing he calls his brain is independent of the universe, and to assume that the thing he calls liberty is a special sort of license-tag that enables him to go without a muzzle."

(Tribute to the Marshall Field Warehouse in Chicago, Designed by Henry Hobson Richardson.)

"Four-square and brown, it stands, in physical fact, a monument to trade, to the organized commercial spirit, to the power and progress of the age, to the strength and resource of individuality and force of character; spiritually, it stands as the index of a mind large enough, courageous enough to cope with these things, master them, absorb them, and give them forth impressed with the stamp of large and forceful personality; artistically, it stands as the oration of one who knows well how to choose his words, who has somewhat to say and says it—and says it as the outpouring of a copious, direct, large and simple mind."

"Whichever way our architecture goes, so will go our country; or, if you prefer, whichever way our country goes, so will go our architecture; it is the same proposition stated in different ways. We are at that dramatic moment in our national life wherein we tremble evenly between decay and evolution, and our architecture, with strange fidelity, reflects this equipoise. That the forces of decadence predominate in quantity there can be no doubt; that the recreative forces now balance them by virtue of quality, and may eventually overpower them, is a matter of conjecture."

"Nature, in its visible, objective form, impinges on the eye its aspects of beauty, of form, and coloring. Here are the elements of earth and air shaped by the delicate hand of time; but the subtle charm of these externals would be incomplete did they not further signify and suggest an internal, a subjective, a creative impulse of origin divine.

"So the materials of a building are but the elements of earth removed from the matrix of nature, and reorganized and reshaped by force—by force mechanical, muscular, mental, emotional, moral and spiritual. If these elements are to be robbed of divinity, let them at least become truly human."

"We will seek and find the architect through the meaning of his executed work, not through his words, grimaces, gestures, suavities or innuendos of speech."

"All real values are subjective; all objective values are unreal; they dissolve under analysis, into subjective value after subjective value, and the residuum, if ever we reach it, is not what man made, but what nature gave. And what nature gives is never objective; it resolves itself, step by step, remove after remove, into the infinite creative mind."

"Human nature determines that subject value, sooner or later, becomes money value, and the lack of it, sooner or later, money loss. The subjective value is far the higher, by far the more permanent; but money value is inseparable from the affairs of life; to ignore it would be moonshine."

"Is architecture a plaything, or is it a great force—a revelation of human character and an inspiration?

"Is it a remnant, or is it a whole cloth from which we are to make for us new garments?

"Is it human now, or is it post-human?

"Has it a foundation, or has it none?

"Is it a part of human utterance, is it a phase of universal speech, or is it dumb?

"Is the art I advocate built upon the sands of books, upon the shoals of taste and scholarship, or is it to be founded upon the rock of character?"

"Most men are narrow minded, that is, they lack the power of abstraction. They can subtract, they cannot abstract. They lack the power to analyze anything fugitive, anything alive, or to synthesize with steadiness and resolution. I might even go further and say that they perhaps do not know what the words mean, much less, what the processes mean. Now a narrow-minded man gets hold, occasionally, on a partial truth, a fragment of truth, so to speak; but, because he is without genuine sympathy for that partial truth, he lacks the power to abstract from it the germ of a broader, a general truth, or to analyze out of it the hundred and one truths of which the simplest state of feeling is made up. Now most men, and specifically, most architects, are of this class; and defective education is at the root of their weakness. They seem incapable of abstracting from their daily practice a general, comprehensive, architectural law. To be sure, they talk now and then about 'immutable laws,' but their routine thinking is wood-sawing of the old-fashioned, heedless kind. They put on the immutable laws, now and then, like garments of ceremony taken from the cedar chest, when they attend conventions and the like, or write papers to be read to others of the immutable sort. That is all for show and holiday parade. But when a man once actually discerns a broad truth, once gets it thoroughly into his system, so to speak, he need not bother about his 'immutable laws,' which, by the way, their advocates violate every day. Nor need he worry about his broad truth, for it will take care of him. He can't get away from it. It will follow him constantly, it will pester him day and night. For, if it is not a part of him, he has it not at all; for such is truth."

"All is function, all is form, but the fragrance of them is rhythm; the language of them is rhythm; for rhythm is the very wedding-march and ceremonial that quickens into song the unison of form and function, or the dirge of their farewell as they move apart and pass into the silent watches of that wondrous night we call the past."

"Logic cannot deal with the creative process for the creative function is vital as its name implies, whereas the syllogism is a pure abstraction. It is fascinating to the mind as a form of the function, so-called pure reason, and, when subordinated to inspiration, it has a just and proper value. If I may say so, there is a logic over and above logic, namely, the sub-conscious, deeply-vital energy we call the imagination."

"The architecture we seek shall be as a man active, alert, supple and strong, sound and sane. A man having five senses all awake—eyes that actually see, ears that truly hear; a man who lives in the present, who knows and feels the vibrant intensity of that ever-moving moment of existence that lies between the dead past and the unborn future, with heart to draw it in, and mind to put it out—that portentous birth, that fertile movement that we call the hour, the very center and the soul of existence, that large abundant moment that we call *to-day.*"

"Thinking is a philosophy. Many people believe that when they are reading in a book they are of necessity thinking; that when they listen to someone's discourse they are thinking; but it does not necessarily follow. The best that reading and listening can do is to stimulate you to think your own thoughts, but, nine times out of ten, you are thinking the other man's thought, not your own. What occurs is like an echo, a reflection; it is not the real thing. Reading is chiefly useful in that it informs you of what the other man is thinking, it puts you in touch with the currents of thought among your fellows, or among those of the past. But you must carefully and watchfully discriminate between pseudo-thinking and real thinking. Pseudo-thinking is always imitative, real thinking is always creative. It cannot be otherwise. You cannot create unless you think, and you cannot truly think without creating in thought. Judge our present architecture by this standard and you will be amazed by its poverty of thought. . . . Moreover, real thinking is always in the *present tense.* You cannot think *in* the past, you can think only *of* the past. You cannot think *in* the future, you can think only *of* the future. By great power of imagination you may think of the past and of the future *almost* in terms of the present—the one is the function of the historian, and the other that of the prophet. But *reality* is of, in, by and for the present, and the present only."

"When you think organically, you will act organically. Just as soon as your thoughts begin to take on an organic quality, your buildings will begin to take on an organic quality, and thereafter they will grow and develop together."

"Bear in mind that you are not to think merely *on occasion,* as a sort of ceremonial, but daily, hourly, all the time—it must become your fixed and natural habit of mind. So will your thinking steadily grow in power, clearness, flexibility and grace—and you will ever thereafter feel what the spirit of independence and self-control truly means."

"If you are deficient in imagination your case is hopeless—you will never understand imagination, just as if you are defective in physical sensibility you can never know the physical; if you have no heart you can never know the world of the heart. For, as like begets like, so only like can understand like. *Understanding* and *words* are far apart—they have little in common. Understanding is of the heart, words are of the mind; understanding is subjective, words are objective—else why should oral discourse affect us more intimately than the written page, else why does the spoken word go so quickly to the heart and the written word lose itself on the way there, as it wanders through the alleys of the mind?"

Who knows the source of the foregoing quotations in architectural philosophy? Don't all speak at once. They are to be found in *Kindergarten Chats,* published in 1901, as a weekly serial which ran through a year of a paper published in Cleveland, Ohio, called *The Inland Architect and Builder.* Can you imagine it? Whoever was the editor had nerve even more than is required today for anyone to publish absolutely frank and fearless thoughts. Claude Bragdon paid tribute to the series in his admirable foreword to *The Autobiography of an Idea.* Yes, Louis Sullivan wrote those things and much more. As the announcer says to his radio audience: "Any of you folks listening who like the program send us a wire. We aim to please." L. S. W.

Travel

As has been a custom for some years past, the Bureau of University Travel announces an architects' tour of Europe, to cover some ten weeks this summer in England, Scotland and the Continent. The tour has been approved by the Association of Collegiate Schools of Architecture. Six sailings are provided for in the schedule, and the cost of the trip varies from $1,055 for the entire route to $835 for a sixty-day trip. A complete program may be obtained from the Bureau of University Travel, 11 Boyd St., Newton, Mass.

The Allied Architects of Washington, D. C.

Announcement is made of the formation of the organization to be known as The Allied Architects of Washington, D. C., along the lines of the Allied Architects Association of Los Angeles, to which the former extends its thanks for the assistance and advice rendered. The Directors of the Washington organization are: Frank Upman, *President;* Horace W. Peaslee, *Secretary-Treasurer;* Appleton P. Clark, Jr.; Edward W. Dunn, Jr., Louis Justement, Delos H. Smith and George Oakley Totten, Jr.

Mr. Peaslee's announcement continues: "Our tentative by-laws have been written so as to make it possible for the Allied Architects to design buildings of a semi-public or institutional nature as well as public buildings.

"The new organization includes almost the entire active membership of the WASHINGTON CHAPTER. The Chapter membership is about 80, but the average attendance at Chapter meetings from twenty to twenty-five. There are thirty-two charter members in the Allied Architects. Articles of incorporation are being prepared by our legal advisor and we expect to be able, in a short time, to render service as a corporation of the District of Columbia. The incorporation is decidedly complicated by the dual character of the organization."

Dash and Enterprise

A correspondent advises us that the rising young architect in his town has adopted the practice of having his name, with the initials A. I. A. painted on the spare tire of his car.

RICHARD ARNOLD FISHER has removed his office to the Thorndike Bldg., 234 Boylston St., Boston, Mass.

DANA SOMES has removed his office to the Thorndike Bldg., 234 Boylston St., Boston, Mass.

FREDERICK W. WEAD has removed his office to the Thorndike Bldg., 234 Boylston St., Boston, Mass.

The Secretary's Page

64. Special Notice to Chapter Secretaries. Due to changes in the operation at the Secretary's Office, it has been decided that hereafter Chapter minutes need be sent only in duplicate. We hope that this simplification of sending minutes to the Octagon office in duplicate instead of in triplicate, as formerly, will bring better results in the future.

65. Chapter Reports. The Secretary has had a busy time this month, due to the many annual reports that have been coming in, but he has enjoyed seeing the results of the year's work in many of the Chapters and the steady growth in service to the community by the Chapters and the profession.

Cleveland has moved into its new headquarters and shows a very good activity in the matter of membership.

Washington State had a very interesting two-day annual meeting and reports the success of the idea of Advisory Ballots in the matter of nominations for new officers. A tour was made of the Olympic Hotel, which was the headquarters for the meeting, and visits were made to the new fraternity and sorority houses. The Chapter is now working on a definite budget and is setting aside ten per cent of the dues each year as a permanent fund. By resolution the publication of the bulletin was approved, and it is to carry on for another year. The Chapter is working on a definite budget for this year's expenses, which sounds to the Secretary like a very desirable proposition. The habit of presenting the President each year with a new gavel is a happy one.

West Texas shows activity and interest. The Chapter is planning to allow $50.00 to each of its delegates to the Convention and to pay the expenses of the delegates to the Tri-Chapter meeting in Texas. The coöperation being shown by the three Texas Chapters is fine.

Minnesota joins the ranks of the Chapters with a new bulletin, called *The Spotlight,* which just arrived at the Secretary's desk. The Secretary is pleased to note that Minnesota is carrying out this without the help of any advertising fund. Minnesota has amended the Chapter By-Laws so that the fiscal year for the Chapter starts in June instead of January, thus giving the officers the summer to make up their committees and the entire winter season for the committees to carry on their work.

Baltimore reports its annual meeting and election of officers.

Nebraska's delightful bulletin tells of the annual meeting to come and of the close touch of the Chapter with the Professional Men's Club.

Washington, D. C., reports further study on the Student Membership, the committee to bring the matter finally before the February meeting, when they will decide on the proposition. Washington is trying lectures on matters connected with building to arouse Chapter interest, and they were fortunate to have with them Mr. Thompson, an English architect, who has come to this country to study American architecture. At the January meeting, Mr. D. K. Boyd addressed the Chapter, and the question of taste in advertising in telephone directories was discussed. This matter was referred to the Committee on Practice. The Secretary wishes to commend the Chapter for its interesting announcements of meetings.

Wisconsin has blossomed out in the new year with its *Architectural Fragments,* and the Secretary welcomes it in the list of Chapter documents. This is a nicely mimeographed bulletin for the members and should certainly keep them in touch with what the Chapter is doing. If the rest of the numbers keep up to the "First Blow," Wisconsin will be very proud of its document.

Chicago reports discussion of the plans for a regional architectural exhibit at the Convention; further appointed a representative to confer with the Western Society of Engineers on the subject of free engineering service. Like the matter of free sketches from architects, the engineers are apparently afflicted with a similar difficulty. The Chapter meeting is filled with interest, having several speakers, including Walter Burley Griffen, who spoke on Architectural Conditions in Australia, and an illustrated talk by the Pacific Lumber Company on the subject of "Redwood from Stump to Market."

West Virginia reports its meeting. Nothing of special interest.

San Francisco's printed monthly bulletin comes in with the bottom of the sheet cut off. The Secretary wonders whether this contained merely advertising matter.

Kentucky reports its meeting and as of interest the narrative by Mr. Hutchings of his trip abroad. He was much impressed by the high esteem in which Institute membership is held over there and spoke of many privileges and courtesies which his membership brought to him. Anything we can do to keep up this high standard of membership should be done.

66. Architectural Service. The Secretary is beginning to receive comments on *The Secretary's Page,* and he has just received the following note from a part of this country and he publishes it without name, but merely to show there are still some who do not understand what the profession of architecture stands for.

"This was told me by a Friend of mine— an Honest Architect—one of the very few in this State.

"A representative of a company manufacturing some sort of 'Specialty' for use in Buildings called upon my Honest Friend and told him with great Joy (but little discernment) that he was 'all set' to do a good business in this section, 'because one of the leading Architects (giving the name which now carries A. I. A. after it—more shame), had promised that if he saw that he (the A. I. A.—?) was taken care of, he (the A. I. A.—?) would see that the Specialty was widely used.'

"Also, two members of a County Commission visited an Honest Architect and told him that they had been referred to him and to one other Architect as being able to give them a good County Court House. The said Commissioners stated that it was customary in their County for an Architect or an Engineer doing County work to whack up with the Commissioners on the fee, and asked what whack he would offer. Just before the whack landed and they took their enforced departure from the Architect's Office, they were informed that the other Architect to whom they had been referred would un-

doubtedly accept any proposition they made. (This other Architect (?), by the way, carries A. I. A. with him.) It was later reported that the said second Architect (?) was doing the job. BUT, a little later, it appeared in the Public Press that still a third Architect (again A. I. A.) had been given the job by the Commissioners in preference to number two! ! ! ! !

"The inference is obvious—and rather NICE, what?

"And I DARE YOU to publish this in *The Secretary's Page.*"

67. APPRECIATION OF PUBLIC SERVICE. The Secretary has just seen a letter from the Secretary of Commerce to the Chairman of the Building Code Committee, which speaks for itself. Of the seven members on this Building Code Committee, two are members of the American Institute of Architects.

"I am most happy to receive the report of the Building Code Committee on minimum live loads allowable for use in the design of buildings. I have directed that it be published in the elimination of waste series of the Department of Commerce. These recommendations of the committee make possible, I believe, savings of millions of dollars a year for the American people, and thus contribute toward a higher standard of living.

"The report is, however, significant in other ways. It demonstrates once more the willingness of American professional men to devote their time and energies to public service, and the readiness with which a well accredited group can obtain the coöperation of hundreds of others in such an undertaking.

"Another most important contribution that is being made by your committee, in addition to placing the design of buildings on a more scientific basis, is to emphasize the real saving that a thorough and efficient municipal inspection of building construction makes possible. With an inspection service of a high order, and well framed codes, the great majority of competent engineers, architects and constructors are enabled to make the best use of their skill in design and quality of workmanship. With good inspection there is no occasion to penalize these able and honest persons by requirements for excessive use of materials that are sometimes specified as a partial measure of protection for the public from the ignorance and neglect of incompetent and irresponsible persons.

"I have no hesitation in thanking you, in behalf of the American public, for your laborious efforts in the preparation of this report."

Scientific Research Department

68. The Secretary is now confronted with the problem of picking excerpts from the work of the Scientific Research Department, whose activities have been reported in the JOURNAL almost every month of late. Due to press of work, Mr. Sullivan W. Jones has been forced to resign from the Central Committee on Lumber Standards, and the President has appointed Mr. LeRoy E. Kern to succeed Mr. Jones as the Institute representative on that Committee. The Institute was represented at a meeting of the A. S. T. M. Committee on Slate, held in New York on 21 January. The standard classification for filing has been revised and is now ready for distribution. On 28 January the publishers of the architectural magazines of the country were the guests of the Executive Committee of the Producers' Research Council, the purpose being to explain to these the objects, aims and purposes of the Council. There was a meeting of the Executive Committee of the Producers' Research Council at the office of the Scientific Research Department on 28 January to take up such matters as the coming exposition at the time of the Fifty-eighth Annual Convention, the Architectural History of New York and other affairs. Communications on various matters were received from the Indiana Limestone Quarrymen's Association; Edwin W. Ely of the Department of Commerce, various architects; Otis Elevator Company; Johns-Manville, Incorporated, all of which is but a small part of the work being done by this Department.

Public Activities of the Chapters

69. KANSAS reports work on the Registration Law, and that *Functions of the Architect* is to be rewritten and republished. It also reports lectures before different clubs and organizations by architects on architectural subjects and radio talks by some of the members, all of which is very much to the good.

CLEVELAND reports a resolution in favor of State Registration, and a Committee has been appointed to prepare a proper kind of a bill and work towards its enactment.

IOWA reports the instructions to its Executive Committee to get behind the Registration Law now before the Legislature and help put it through.

WASHINGTON STATE reports Small House Service Bureau activity and work with the State College. It also speaks of a discussion on the matter of "Paid Publicity" in the newspapers. The Secretary would like to comment that he believes this is wrong in principle, and he wonders whether better results cannot be obtained by offering a service to the newspapers and the public that they will desire to have, rather than to pay them for something in which they are not interested, other than as a means of revenue.

WEST TEXAS speaks of wholehearted Chapter work wherein unwholesome competition was eliminated in three different cases. This sounds fine.

MINNESOTA reports the Regional Exhibit, held in August, radio talks by the Secretary, articles in the *Bulletin* of the State Federation of Architectural and Engineering Societies, a general scheme of press publicity by an editorial service much desired by them and not paid for by the Chapter; a growing confidence in the work of the Chapter shown by frequent telephone calls to the Chairman of the Committee on Materials and Methods; work on the Building Ordinance by members of the Chapter; representation on such Committees as Smoke Abatement, Advisory Committee to the Board of Education, City Planning Committee, Metropolitan Planning Commission and the Citizens' Charter Committee.

NEBRASKA reports on the annual session of the Construction Branches of the Building Industry at Omaha, where Mr. William L. Steele of Iowa and Mr. Robert D. Kohn of New York were the principal speakers.

WASHINGTON, D. C., reports work on the Zoning Committee, the representation of the Chapter in the pageant at the Arts Club Ball and the appointment of delegates to the Federation of Citizens' Associations.

BOSTON reports with modesty the part the Chapter has taken through its representatives on the work on the "Intermediate Thoroughfare" through Boston. This follows work done on two other great thoroughfares, and the Secretary has a suspicion that more was accomplished through the Chapter membership than the words actually convey.

KANSAS CITY tells of the staging of two exhibitions of architecture, which were obtained through the coöperation of the American Federation of Arts and are being shown in the Art Institute of Kansas City, under the auspices of the Chapter. Three editorials have been furnished to the *Kansas City Star* for the special purpose of assisting the people of the city to an appreciation of good architecture as typified by the Kansas City War Memorial. Letters were sent out by the Chapter to various civic organizations, giving them information concerning the Institute and the local Chapter, and offering their assistance in any problems within the scope of the profession. They are also working on architectural lectures for local civic organizations.

CHICAGO reports a letter from the Illinois Society of Architects, which encloses a copy of a letter from a manufacturer, who thereby agrees to discontinue some objectionable advertising; an instance of what can be done by the profession.

NEW YORK, through the New York Building Congress, presents an interesting summary of building conditions in New York for 1924-1925. This is a very valuable document. The Chapter is hard at work on what is perhaps the largest public activity any Chapter has ever attempted —the Convention in April, and the direction of the great exposition and exhibits connected therewith. The Secretary spent a day in New York and he takes his hat off to the New York architects for their daring and enthusiasm. Any man who misses the Convention in New York this April will have missed an opportunity that will not be repeated in many a long year.

EDWIN H. BROWN, *Secretary.*

Legislation in Connecticut

The Hon. Seth Low Pierrepont, a member of the Legislature of the State of Connecticut, has introduced a bill which seems to call for the support of every member of the American Institute of Architects. Mr. Pierrepont would have the State appoint an Advisory Architect who would serve exactly as the Advisor serves in competitions conducted under the rules of the Institute. This Advisor is selected by six architects, who are to serve as a commission for that purpose and to assist the Advisory Architect when called upon.

The Advisory Architect is not permitted to design or serve as architect for any State work, except minor repairs costing not more than $10,000. His duties are confined to the preparation of programs for competitions for State work, collecting all data essential to the development of plans, and to study the needs of the State in every particular as relates to public buildings.

The bill provides for preliminary estimates of cost of proposed State buildings as a mandatory condition precedent to State appropriations for such works. If the State concludes to erect a building the Advisory Architect shall invite architects to compete, the Legislature having made appropriations for certain compensation to some of the competitors if the work is important. When the selection of the plan is made it shall be the duty of the Advisory Architect to make a quantity survey with the help of assistants provided for that purpose. Cost based on such survey shall be presented to the Legislature and the appropriation shall be an amount completely covering such reported cost. No appropriation for any public building may be made without such report on cost being before the Legislature.

While there is nothing novel in the idea presented by this approach to a building operation in ordinary practice, it is new as relates to State works. Too frequently Legislatures have made an appropriation of a certain sum without any true knowledge of final cost; this is no fault of the Legislatures, as they have no means of ascertaining cost. Such appropriations usually run for two years, and it may be found that they cover the cost of but a small part of the building; additional appropriations are called for from time to time, delays are caused, costs mount to a point far beyond any amount anticipated by the people of the State, and still the building must be completed regardless of cost.

In the bill presented by Mr. Pierrepont, the activities of the Advisory Architect are limited, but extremely important to the State. Buildings and uniforms are the only material evidences of government. A government lacking appreciation of good architecture cannot hold the respect of the citizens. The historical picture of any nation is as it appears in the remaining buildings of the period. Mr. Pierrepont has undertaken a difficult task in his effort to obtain for his State the best that can be given by the architects in our land, and he seems to be following one of the best rules ever adopted by the American Institute of Architects as an aid to success in his purpose.

WILLIAM P. BANNISTER.

Building Congress Notes

The first 1925 meeting of the Philadelphia Building Congress, 16 January, was a dinner in honor of its retiring president, Mr. D. Knickerbacker Boyd, in acknowledgment of his long and untiring services. Mr. C. C. Zantzinger acted as toastmaster. Among the speakers at the dinner were Messrs. D. Everett Waid, President of the Institute; William Stanley Parker, President of the Boston Building Congress; Julian F. Millard, State Supervising Architect of Pennsylvania; Morris L. Cooke, Consulting Engineer of Philadelphia; Thomas W. Armstrong and James L. Meade, Secretary of the Brotherhood of Electricians.

Scientific Research Department

At the meeting of the Advisory Council in New York City on 30 January, the following activities, among others, were given consideration:

CUBING BUILDINGS: The request of Mr. D. K. Boyd, Chairman of a sub-committee on standard methods of cubing buildings to be allowed to enlarge the Committee if he thought it advisable, was approved.

CONCRETE BLOCKS: The Simplified Practice Recommendation on Concrete Blocks, Tile and Brick were recommended for Institute approval, provided the Institute had been invited to be represented at the conference at which the recommendation was developed.

SIMPLIFIED PRACTICE RECOMMENDATION ON SINGLE AND DOUBLE TIER STEEL LOCKERS: It was thought that the architect was not in a position to pass judgment on this subject and consequently neither Institute approval or disapproval should be given.

Paris Letter

THE RECONSTRUCTION of the devastated regions has necessitated the collaboration of a vast number of architects, so great—in fact—that many men have been able to create important positions for themselves without possessing all the qualifications requisite to the practice of the profession of architecture. In France, as we have said before, anyone may call himself an architect, and may design buildings, not alone for private clients, but for public interests as well. Some months past, in one of the Paris Letters, I pointed out the inconvenient results consequent upon such liberty of action, but these malpractices have now become so serious that the problem of registration of architects is a burning question among men of the profession and all artists wherever they congregate.

It is, I think, better to discuss first of all the state of affairs which will obtain some day, we hope a day not far distant, when the problem of architectural registration will have truly become an international one. Just as at present in the medical profession and the merchant navy, in the public interest and for security, there should be a certain common basis of appraisal among the examination requirements of all nations, without restricting the individual in any of his peculiar bents and qualifications. Then an analogous title in all countries will be granted in recognition of technical knowledge of equal value everywhere. This will be the ideal state of the future, we hope; let us glance now at the problem as it exists today in France.

We have a huge number of architects who have come into existence through the time-honored method of apprenticeship; men who start first of all as draftsmen in an architect's office, mere detail checkers, and so forth; little by little they become versed in the practices of construction and business methods, and finally they are offered the opportunity to set up their own office, or to enter their patron's firm.

In general, this category of men produces technicians rather inexperienced and of a very modest artistic value, to say the least, but men who are perfectly adapted to the mentality of the great middle classes. They are very much 'in the know' on questions of ordinary construction and of price. Theirs is the task of upholding professional honor. A few of them, assisted by their natural aptitudes, eventually become conscientious artists.

The next class of architects have come through the Ecole des Beaux-Arts, and all the young men of this group have pushed their studies far enough to secure their diplomas. These, then, form the elite of the profession, and their number is daily increasing.

But the renown which attaches to the title of *'architecte Diplomé par le Gouvernement'* has led a number of less pretentious schools to bestow the title of *'architecte diplomé* by such and such a school,' upon their students. The danger inherent in such practice is only too evident, and is brought forcefully to our attention when we find that certain correspondence schools solemnly profess to give their aspiring 'attendants' a diploma after a brief course by mail. If the scientific aspects of the profession are to be taught in this slipshod and insufficient fashion, imagine to what new heights construction and designing practice, not to mention the development of any æsthetic and artistic sense, will henceforward attain!

There still remains the third class: undesirable men who have principally had their small beginnings in the liberated regions and who are now drifting back into the large cities: a little working knowledge of the cost of jerry-building, a supreme indifference to artistry, a complete absence of scruple, a wild desire to do business for profit alone—these justify, in their minds, the dishonesty of printing 'Architect' on their letterheads, the better to dupe their clients. Very successful are these practitioners, and the widespread knowledge of the profits to be made is sufficient to induce new acolytes by the score to serve the goddess. The number of these *soi-disant* architects has grown by geometric progression since the late war. The foul stream must in some way be dammed before it becomes an engulfing torrent.

But the individual architect's point of view is predicated upon his own peculiar circumstances. Each man looks from his little casement upon the architectural world, and finds it good, bad or indifferent in accordance with the angle of his own window. There does not exist a broad, catholic viewpoint on regulation. Constantly, in our great Societies, the debate on the subject gives way to discussions, and becomes involved in intimate and private questions.

To all practical intents and purposes, professional sentiment—as much as there is of it—seems to feel that an examination is necessary. If this examination is to be the *'Diplomé du Gouvernement,'* it should be open to candidates of all ages. Outside of this examination, which attests—insofar as it is ever possible—only to the artistic and technical equipment of the candidate, he should, before he is permitted to call himself a member of the profession, be required to subscribe to a precise and specific code relating to professional honor, and to agree to abide by the decisions of a disciplinary council charged with surveying his application.

But, supposing that this organization be established, there is a transitory period to traverse and a status quo which cannot be altered without injustice to certain men who are at present practicing, if these regulations are to be retroactive. During this transitional period, the

question of professional honor will be the sole consideration. All men already established in the profession will be accepted, provided that they likewise consent to be governed by these same professional rules and the disciplinary council. If unscrupulous men bind themselves to abide by these requirements with no intention of doing so, we may hope that they will be speedily unmasked and debarred from practice.

For all this will be sanctioned by a law—the French Parliament has already passed a similar one which protects the title of those liberal professions which are regulated, such as medicine and law.

The architects will have the advantage of this law if they know how to come to common agreement for the purpose of suggesting an inclusive regulatory project to the Government, which will, in future, protect the public against incompetent practitioners and which, for the present, will not abrogate the rights of self-respecting men who have risen in the profession through long and honest endeavor.

Quite aside from these preoccupations of their body politic, architects, and with them all other artists, are intensely interested in the preparation of the International Exposition of Decorative Arts, which appears to be a most imposing affair. It was conceived in a spirit quite apart from that which animates other expositions which we have attended. Its intention was to accentuate public interest in the intimate collaboration between artist and artisan—and the necessity of finding original solutions for the new problems of execution and production which are constantly arising today.

In the usual exposition, business organizations and houses are the principal exhibitors who present their products; the intelligence of those who conceived the affair, the competence of the workmen who have executed and sometimes perfected their conception, have ordinarily disappeared beneath the monumental letters of the signs which emblazon the name of this and that firm. In the present Exposition, the ultimate goal is the one object in view, all else is but secondary, and it is presented in common through the different activities of which it is the result. The business house is but one part of this Exposition and those which understand the value of allowing their collaborators to appear in important rôles will not regret the sacrifices which they have made for this exposition.

The organizers have been compelled, on the other hand, to make a very severe selection. All old imitations, all unoriginal work, all purely commercial products, have been rigorously excluded. Certain interests have even cried out against this partiality, against the injustice towards those who have preserved the cultivation of national styles—from the Middle Ages up to Louis XVI —and who can find no better way to revere those styles than slavishly to copy them. As for these people, the answer is that in all epochs France has been revolutionary (we are speaking of pacific æsthetic revolutions), and that today's problem is to demonstrate to the world the magnificent movement which, for the past twenty years, has not only revivified architecture, but all the allied arts, which, like it, are participating in the present movement toward utility and artistic expression.

This is why you will find one unified feeling in the architectural section of the exposition, in furniture, in dress, in fabric, in the arts of the theatre, the street and the garden. Above all, the collaborations have been assisted, encouraged, inspired, but always under the control of an examining jury. The art critics have taken the occasion to exercise their sagacity in tracing the origins and the developments of the tendencies thus manifested which reveal the style of our modern times.

As for me, I see in this vast organization the origin, traced from earliest historic sources, of accord between forms and structures, independent of all repetition of accepted forms, such as, for example, Labrouste made for the Bibliotheque Ste. Genevieve—then in the apostola of Viollet-le-Duc, for the general principles which he perhaps did not know how to apply himself, absorbed by his studies of the Middle Ages; also in the work of Ruprich-Robert on ornamentation; and finally in the courses taught for many years by M. Magne on Art in the crafts, and then by his son in the Conservatory of Arts and Crafts.

The movement has never ceased. Researches of a more or less happy fashion in the fields of pottery, ironwork, bijouterie, and more recently in marble, are its present manifestations. The movement has been greatly accelerated, since the yearly Salons consented to open their doors freely to what have been called the "decorative arts."

The influence of the painting of Manet at Puvis de Chavannes and of Henri Martin, the sculpture of Carpeaux at Rodin and at Bourdelle is hardly less important.

Architecture, as always in the past, is the last to profit by these researches, for in architecture it is less easy and far more exacting to make an attempt on a building than upon a drapery, a statue or a marble.

But already we can trace the path followed now for twenty years by such work as the transformation of the department store du Printemps by Pinet, by the work of Plumet, of Bonnier and of M. Pontremoli—one who may hardly be accused of lacking respect for the past and its traditions—not to mention the host of younger men.

The Foreign Pavilions in the Exposition—the artists of France are sorry to know that the United States is not here represented—show an analogous evolution, more brutal, or on the contrary less accentuated, according to the national temperament of the peoples, or the vicissitudes of their histories in recent times.

In this all that I see, taken with what I had already known, is a striking concord, and the art of one nation in the midst of social effervescence between its present state of affairs by outlandish formulas, while another country which is attempting to find its salvation in political absolutism announces that fact by academic formulas.

I think that great pleasure awaits those artists who are able to study these diverse movements and tendencies, or, better yet, who, without reasoning too much as they pass the swirl of all these displays of objects which have been thoughtfully conceived, painstakingly and even lovingly executed, will become imbued with their spirit.

They will feel themselves revivified and spurred on to new and greater endeavors.

G. F. Sebille.

The Question of St. Paul's Cathedral

Once again disquieting reports of the instability of the great dome of St. Paul's Cathedral, in London, have been circulating—principally in the British architectural publications but also in certain American journals. A commission authorized to investigate the condition of Sir Christopher Wren's masterpiece has lately made public its findings, only the briefest details of which have been so far available. We deem it of great interest to present, by reason of its careful preparation and inclusiveness, a portion of a paper by one William Harvey, which lately appeared in that excellent journal *The Engineer,* (London), 30 January, to which we are indebted for the text and the accompanying illustrations. While this paper is engineering, in its concept, as distinguished from architectural, its clarity and precision in presenting what its author has found to be the conditions he discusses make it worthy of serious consideration:

The history of the Cathedral cannot be ignored in any examination into its construction. St. Paul's was not designed and built as the culminating work of a long series of buildings, each one finer, sounder and larger than the last, but as the result of the imaginative efforts of a young Doctor of Medicine and Science, whose inventive turn of mind and experimental studies in astronomy, microscopy, vivisection and mathematical theory had impressed his powerful friends at court with a sense of his exceptional ability. To all these studies, Wren added classical research into the architecture of the Romans and the practice of architecture in accordance with his researches as far as was humanly possible. The architecture of the Roman Renaissance was a somewhat exacting art, and though Wren protested against rules of too hard and fast a description, his work suffered in its constructional side by too close adherence to them.

The defects which are receiving the attention of the Commission and the public at the present time are not all to be laid to the discredit of the artistic style adopted by the architect. Some of them may be charged to the ordinary building methods of his day, and others to the fact that he was working in the light of his own imagination and study, and without the example of kindred buildings to guide him.

The tradition of building construction had reached a low ebb when Wren produced his design for the Cathedral and obtained from Charles II. the Royal warrant for its erection on 14 May, 1675. The construction of large vaulted buildings had become rare in England. The sumptuous Tudor palaces of Hampton Court and Nonesuch were famous for their rich decoration in cast lead, carving, painting and gilding, and not for the mighty span or height of any individual chamber.

As a mathematician Wren was capable of computing accurately the effects of pressures and resistances up to a certain point, and some of his constructional expedients are marvels of efficiency, but it was impossible that his attention should be directed in time to every necessary problem, and in some cases the decadent tradition of his masons was allowed to settle matters for him. This was the case in respect to the composite construction of the piers and walls of the church, with facings of ashlar and infillings of lime and rubble concrete, the plentiful supply of old stone from the demolished old St. Paul's doubtless forming an additional inducement to adopt this practice.

As the work progressed and the architect became more and more master of the constructional arts, he seems to have realized the necessity of insisting upon better ways of his own devising, but in its early stages it is probable that he was less inclined to doubt the efficacy of the normal methods of his time and those of the Gothic builders with whose works he was well acquainted.

It must be remembered, too, that outside a circle of a few exceptionally brilliant men, theoretical or applied science was practically non-existent in England, and mentally alert and untiring as Wren must have been, it was impossible for him to recognize at a glance just when it was vitally important for him to improve upon or reverse some accepted time-honored tradition. The following extract from his writings indicates how one great structural feature, the abutment of the arch, was "calculated" before the time of Wren, and also shows his attitude of mind towards scientific economy of building. In both these respects it throws light upon the state of the work in the Cathedral.

"It seems very unaccountable that the generality of our late architects dwell so much upon this ornamental and so slightly pass over the geometrical, which is the most essential part of Architecture. For instance, can an arc stand without butment sufficient? If the butment be more than enough, 'tis an idle expense of materials; if too little, it will fall; and so for any vaulting. And yet no author hath given a true and universal rule for this, nor hath considered all the various forms of arches. The rule given by the

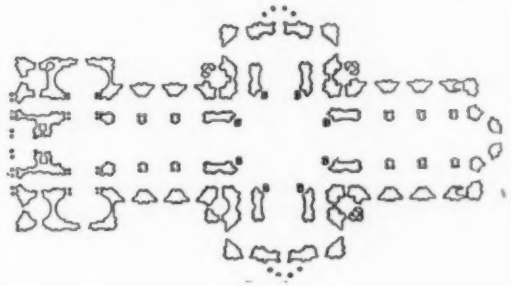


FIG. 1

Maximum loads applied to piers at B on one corner of each. Practically all the defects in the central part of the building may be accounted for by this excessive and eccentric loading. Wind pressures, vibration and subsidence probably contribute to movements and fractures primarily caused by errors of load distribution, and the transmission of thrusts.

authors for the butment of arches, is this: Let A B C be the arch, of which B is a third part; extend the line BC, make CD equal to CB, and draw the perpendicular DF, this determines the butment GF (as they say) but wherefore? For add to the bottom, as KL, the arch must then certainly press more upon the higher part than the lower; or if some additional weight be added above the arch, that must still press more than before this was added. So this rule (if it were built upon any sure geometrical theorem, as it is not) is neither true nor universal; and what is true will be shown to be only determinable by the doctrine of finding the centers of gravity in the parts of the proposed design."

The attempt to avoid "idle expense of materials" becomes apparent on examination of St. Paul's, and most emphatically so, when that building is compared with St. Peter's at Rome, where the piers supporting the dome are gigantic solid masses, which block up the aisles completely. Wren, on the contrary, set great store upon an uninterrupted vista down every avenue and upon the omission of any projecting masonry that might narrow down the grand Central Nave.

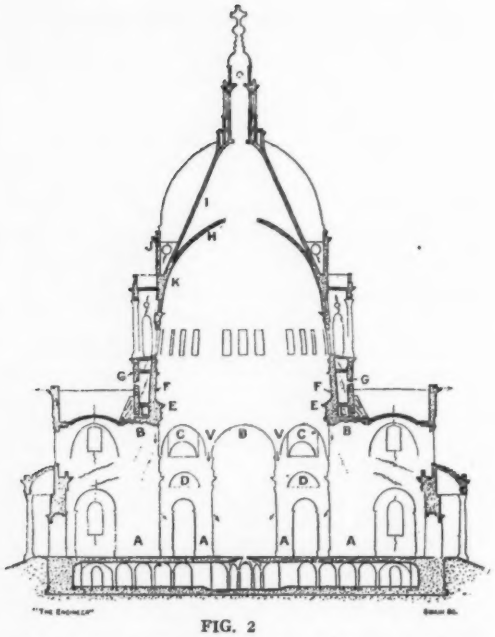


FIG. 2

Cross-section of St. Paul's Cathedral through Transepts. Present state with defects. A A, eight principal piers. B B, main arches applying concentrated pressures by means of their common imposts upon restricted portions only of the piers A. C D, upper and lower alcoves with round-headed arches incapable of spreading the weight of the central mass to the bastions in an efficient manner. E, whispering gallery, surrounded by 32 cells and 32 defective diaphragm walls and buttresses. F, heavy inner drum. G, light outer drum. H, inner dome. I, cone. J, vertical upper drum. K, position of iron chain. L, stone-built cells.

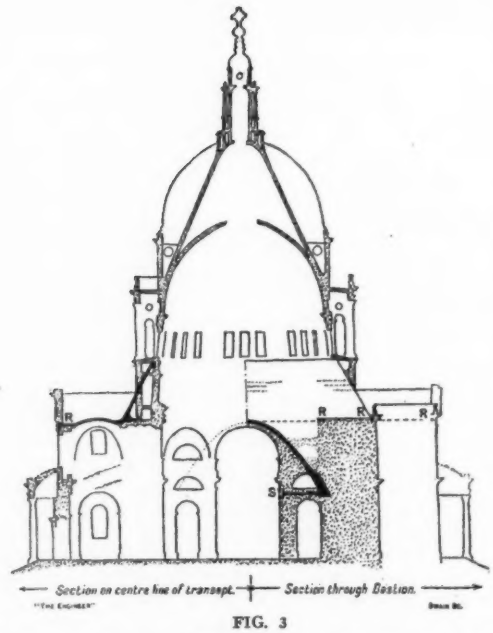


FIG. 3

Sections showing a possible scheme of repair in which the 32 defective buttresses would be aided by a new cone of reinforced concrete designed to distribute some part of the weight of the drums upon the unloaded back portions of the eight main piers, the bastions and the surrounding walls of the building. R, reinforcement buried in wall tops to prevent further movement in the building. S, anchor bars and plates to distribute thrust of foot of cone and correct existing thrust of aisle vault.

The eight main piers of the dome are, therefore, kept in line with the ordinary arcade piers of the Nave, and are only slightly thickened on the side next the aisle. In plan they are long and narrow—9 ft. by 30 ft.—but appear to be well buttressed by bastions at the four re-entrant corners of the building, where the transepts adjoin the Nave and Choir. These bastions only contain comparatively small chambers, such as vestries and staircases, and are surrounded with thick walls more massive than the main piers.

The plan is articulate in that almost every arch has a possible buttress mass in alignment with it; but the section of the building is not so competently designed in respect to arch thrusts as the plan seems to promise, and the vaults and arches have occasioned some outward movements in the exterior walls—Fig. 1. The use of Roman round-headed arches has something to do with this, and the great load of the high central part of the building would, of course, tax the stability of arches, whatsoever their shape, if mounted upon slender piers rising to a height of 65 ft. from the ground. The pressures of the great arches under the drums find their way into the bastions and into the long blank walls built above the aisle walls upon the exterior of the building.

This is a masterly arrangement of material calculated to spread lateral thrusts over a large area of wall base and to oppose them by a heavy but diffused weight of counterfort. Unfortunately the connection between the buttress mass and the main pier is made by means of round-headed arches, which have become distorted with unequal settlement. Although somewhat crippled in line, the arches continue to do their work, though not so efficiently as would have been the case had half arches of flying buttress form been substituted for them. The round arches forbid any adequate diffusion of weight, and it seems that, although Wren designed his buttressing system with great skill, the idea of spreading the vertical component of the load did not occur to him—Figs. 2 and 3. The little building known as Temple Bar is an instance of Wren's playful treatment of arch pressures and buttresses, and is also an extreme instance of concentration of loads; but it must be remembered that Wren had not before him the example of the late Mr. Eiffel's great tower, and it was only late in life that he realized that weights like thrusts might be brought to their foundations in an orderly progression from light to strong. The concession to the requirements of the Roman manner in the matter of round arches is regrettable in St. Paul's Cathedral, for, unlike the toy structure of Temple Bar, its size and weight generate pressure calculated to search out all the weak spots in the design.

Other deficiencies in buttressing occur in the transepts, the end walls of which have been pushed out and the arches and vaults distorted. In each transept large round-headed arches span the space between the outer front walls and the two main piers, and these arches carry a considerable load of clerestory wall. At a higher level the domical vaults of the transepts also press outwards upon the un-

buttressed face walls, which are not substantial enough to control the thrusts by top weight as they are thinned down from the inside above the main interior cornice—Figs. 2 and 3. This leaves the outer face of the wall more heavily loaded than the inside, and therefore inclined to overturn outwards under its own eccentric load whether pressed upon by arch thrusts or not.

The high blank upper parts of the aisle walls, which receive and diffuse the lateral pressures of the high vaults of nave and choir are built in a similar manner with the bulk of their weight on the outside. These walls, so usefully placed in regard to thrusts received upon their ends from the great arches of the central domed area, are thus imperfectly poised in regard to the thrusts of the aisle and nave vaults, and tend by their eccentrically applied weight to produce overturning moments in the same direction as the vault thrusts.

The pressures from the high vaults are conducted down to the aisle walls by means of flying buttresses of constructional shape; the fact that they are hidden behind the blank upper parts of the aisle walls in deep areas over the aisle roofs having permitted Wren, in this instance, to disregard the rules of true Roman architecture. The flying buttresses are practically invisible, even in views taken from the air, and Wren's writings leave no doubt that he was intensely anxious to avoid the accusation of any leaning towards Gothic style. But, much as he wished to avoid it, and greatly as he improved upon it, in some respects the old tradition persisted in spite of him.

A false confidence in the strength of masonry may easily be gained by the detailed examination of Gothic vaulted buildings, which are almost always skeletonized to a dangerous degree, and only endure with the aid of continual repairs, renewals and even more or less wholesale rebuilding.

In the absence of tabulated strengths of materials Wren had to use his judgment as best he might in reference to the bearing areas of piers and the weights they were to carry. Domed buildings like that which he was erecting were not available for comparison, and the proportion of areas to pressures in existing Gothic buildings did not necessarily apply to the altered style, the new disposition of masses and the immense scale of the new building. Many Gothic piers are subjected to eccentric loading, to bending and even to torsion, and were expected to stand a certain amount of misapplied pressure in the ordinary course. The masonry of a Gothic building was practically known to possess a certain value in what would now be called cross-stress. Gothic arches and vaults were almost invariably brought down upon outcorbelled imposts, the well-understood cantilever action of which was useful in combining the vertical weight of a pinnacle with the oblique thrust of the arch. In a few Gothic examples, this overconfidence in material has resulted in shearing of the stonework and collapse of the vault, but in the great majority of cases the pressures have been resisted satisfactorily to all appearance.

While Wren despised Gothic building, he absorbed unconsciously a confidence in the tenacity of stonework that would have astounded the Gothic master builders, and throughout the whole fabric of St. Paul's Wren's undue trust in the use of masonry under cross stress has induced defects and fracture in what might have been, from the disposition of its masses on plan, a thoroughly well-balanced building.

The eccentric loading of the outer aisle walls and the face walls of the transepts has already been mentioned. This was a retrograde step as compared with the design of a Gothic buttress, which is loaded with its pinnacle in a manner calculated to improve the resultant line of arch thrust and reduce it to a direction as nearly vertical as may be at the nearest convenient point. Both in the small Temple Bar and the lower parts of the gigantic Cathedral Wren failed to show that he realized the importance of correcting the thrusts as early as possible. During the progress of the work he must have been acquiring experience, however, and the possible outward thrusts of the sloping drum and cone are top weighted with vertical drums of masonry which show on the section in very much the positions that a Gothic master would have chosen for them. The enormous weight of the sloping inner drum and the vertical outer drum are placed too near the centre of the building and the marked eccentricity of application of the load is the principal cause of the defects in the piers.

The weight of the drums and domes has been variously estimated at from 40,000 to 48,000 and even 64,000 tons, and even the lowest figure gives a high average value for the safe resistance of a rubble-filled fat-lime built ashlar-faced pier, supporting the load equally diffused over its whole horizontal section. But this is far from being the case. Wren's blind confidence in the ability of masonry to act in a united manner encouraged him to perch by far the greater portion of the load on the inner ends of the piers.

To make matters far worse, the good Roman manner took control again at this point, and for the sake of regularity, all the eight great arches were made equal in span, although this involved an enormous concentration of pressure upon a single corner of each pier. The two voussoir rings of the arches meet and unite at the springing and rise for some feet above it in a common impost which has, at springing level, only the bearing area of one single arch ring. Some large ashlar stones were used under these terribly restricted imposts, but one that was examined during recent repairs was found to have broken under the extraordinary concentration of pressure.

Exactly what areas and what pressures are involved are indeterminate, for each pier is split into regular portions by fractures, some under the point of application of the stress, as above mentioned, and others between heavily and lightly loaded portions of the piers. The unit stress on the inner ends of the piers must be phenomenally great and must remain so even after the most thorough patching and grouting has been executed unless scientific control is devised and executed to modify the application of the load.

When the work had almost reached the level of the Whispering Gallery, Wren seems to have begun to realize that the weight he was placing upon the great arches and piers should be diffused if possible and, around the base of the heavy inner drum, he constructed a series of thirty-two cells with inverted barrel vaults to spread the weight of the drums upon the four arches and four semi-domes below. For the same purpose he extended the diaphragm walls which connect the drums and separate the cells and formed a series of thirty-two buttresses or counterforts on the outside of the outer drum. These may be regarded as extended footings to the weight of the dome drums, but as such they have proved inadequate; all are fractured, some very severely, particularly those which might have spread weight upon the four bastions. The function of the buttresses does not seem to have been grasped by modern inquirers. Their adequate repair is not even mentioned in the Commission's Report. The tops of the buttresses are hidden under the roof of the church, but above roof level the radiating diaphragm walls are continued upward between the inner and outer drums to the annular ring of flooring at the sill level of the drum clerestory windows. The outer drum being much lighter than the inner one, all

these radiating diaphragm walls have been fractured by the settlement of the inner drum. Above the window sills the outer drum is continued only as an open colonnade, but each column is turned into a buttress by means of a masonry web connecting its upper part to the inner drum. These webs Wren reinforced with iron embedded in lime concrete; but notwithstanding the reinforcement, the round arches and round loopholes of the masonry webs are all dislocated in a surprisingly regular manner.

The use of reinforcement and of brickwork in the inner dome and the cone which supports the lantern marks a departure from the Gothic masonic tradition of the lower parts of the building, but the masonry masses surrounding the base of the cone and the inner drum must have been designed to act as top weight to possible outward thrusts from the cone and from the sloping inner drum—Fig. 2. Although Wren chained the base of the cone and inner dome against bursting pressures, he expressed his preference for compressive and balanced design in buildings intended to last, so that the use of the outer drums as pinnacles to the thrust of the inner drum and cone is in accordance with what is known of Wren's personal feeling in the matter.

This personal feeling against the use of unbalanced masses merely restrained by tensile material may also account for the use of a wooden outer dome and for the eccentric poising of the great drums upon the principal piers, the outer lightly loaded portions of which Wren probably viewed in the light of buttress masses. The piers placed edgewise to the thrust and to wind pressure are admirably adapted for buttress action, had provision been made for applying these pressures to them in a less dangerous manner.

To save Wren's domes from demolition it would be necessary to resort now to the "iron" (or steel) which he himself pronounced to be "at all adventures, a good caution" and bind in the outward leaning walls with an endless chain of reinforcement buried in their thickness. Around the central parts of the building the reinforcement would be calculated not only to resist the outward pressures of the existing building, but to form the base of a new truncated cone erected in the spaces between the roofs and the vaults where it would be out of sight from both the interior and the exterior of the building.

The function of the cone, which would penetrate the outer drum and be pinned into the inner one at a point below the drum clerestory window sills, would be to aid the thirty-two defective counterforts in spreading the weight of the drums upon the outer unloaded portions of the piers and upon the bastions and aisle walls. The cone would have a circular base at vault top level in the form of a great tension ring which would be connected with the existing defective buttresses and with the drums by means of tensile reinforcement during their repair in detail. The cone would also continue downwards to obtain the support of the side walls of the bastions and effectively distribute weight upon them.

Once the pressures had been safely transmitted and diffused by these works it would be possible to deal with the problem of the main piers by replacing the existing defective rubble core with sound new material suitably reinforced to meet the eccentric pressures, which cannot be altogether done away with even though they may be beneficially modified and reduced in intensity.

The design of temporary centres for the eight principal arches and of shoring for the piers would be the first work undertaken in such a scheme, the falsework being designed to facilitate access to the faces of the piers yet capable of upholding them rigidly during the operations. The underpinning of any part of the building that might be required in view of the comparatively poor foundation could be much more safely put in hand after the walls had been reinforced, the pressures diffused and the piers consolidated. The design of all new works would be preceded by a most exhaustive inquiry into the movements of the existing structural masses of the building, for the principle of scientific conservation is to amend or neutralize the damaging drift of one part by harnessing it to a mass tending to move in the opposite direction. In the case of a building of such gigantic size and importance, constructionally, historically or artistically considered, this inquiry should be conducted with the help of a series of survey drawings revealing all variations from true alignment in length, breadth and depth, and also by means of a series of experimental models tested to cracking point under pressure to ensure that the movements in the great structure are fully comprehended by all concerned in the repairs.

In addition to the benefit to the building, a comprehensive scheme of repair would reveal many statical facts that are either unknown or have been forgotten with the disuse of vaulted methods of construction. What can be learned from patching has been known for two thousand years, and the Commission's report acknowledges that the proposal to patch will lead to the demolition of the building in due course.

From Our Book Shelf

Brick and Craftsmanship

It would be difficult to treat in a more understanding or sympathetic manner the material gathered together under this title.[1] The rough historic background is so adequately handled as to enhance materially the value of the book. In consequence the reader approaches his study of the excellent examples of brickwork presented equipped with enough information to appreciate the quality of the work shown.

To the writer the mellow charm of these old walls, their nice restraint, coupled with their daring irregularities, combine to give the very essence of the delicate flavor that is so typical of the most homely and lovable work in England. No monotony, no dull regularity, but rather a perfect understanding of the limits of the material, together with true craftsmanship, make of the English brickwork of the Tudor and Georgian periods both the delight and the despair of our modern designers and artisans.

This little volume with its balanced appreciation of the old and the new should receive welcome at the hands of the discriminating architect.

WILLIAM EMERSON.

In the Drafting Room

It would be well for the reader of *Over the Drawing Board*,[2] by Mr. Ben J. Lubschez, to open this new and revised edition in a quiet and thoughtful mood, for there is more here than mere guide-book rules for draftsmen. men.

For example, one would not like to lose the philosophy

[1] *English Precedent for Modern Brickwork.* Architectural Forum, New York, for the American Face Brick Association, Chicago.

[2] Published by the Press of the American Institute of Architects, Inc., 250 West 57th Street, New York City. 1923.

of the author at the start, when he so pleasantly emphasizes the value of friendliness in the drafting room. He shows that we may well be human before we may expect to be architects. We are invited to attend first to such normal conditions as ventilation and light for the drafting room; there must always be fresh air "to keep the head clear and the hand steady." What more in a general way does the architect need than this?

And the other essential thought I found at the beginning was Mr. Lubschez's conception that the architect and draftsman are in league for a good end with the coöperation of the client, and in a spirit of understanding which makes no dumb distinctions between man and boss.

Here is no world of drudgery. These T-squares are not the heavy oars of the galley-slave; they are goodly instruments of service, pleasant to touch, of infinite promise. Attend then, the author says, to all of the small details and paraphernalia, and so on to expression through intelligent technique. And he proceeds graphically to describe what the various phases and secrets of the draftsman's are in a manner so cheerful that we enjoy the sincere good spirit as well as the precept.

It is a book for grown-ups as well as fledglings. From the stretching of mounts to the processes of etching it is complete without being encyclopædic. It may be read in a few hours, but its references and bibliography form the outline of a very complete course of study. The chapter on Geometrical Short Cuts is good ready reference for anyone; that on Water Color invites our talents; and the concise treatment of the subject of Photography encourages like a brotherly hand on the shoulder.

In a mechanical age of haste we find here no hint of scramble or hurry, no slighting of our job, no exploitation. In these pages the things of the drawing board have an intrinsic value. They have dignity and are properly respected. There is no killing of the goose that lays the golden egg, but honor to her, long life and respect.

DELOS H. SMITH.

City Street Architecture

Professor Reilly's book[1] will be chiefly interesting to American readers as an indication of how the best newspaper left in the world deals with architecture. The little articles here gathered first appeared in the pages of the *Manchester Guardian,* well illustrated, and while we are unable to evaluate their effect we can take note of a newspaper interest that transcends anything of which the United States can boast. The illustrations in the reprint reveal a kind of sturdy nobility that once animated the builders of the great free trade center of the British Empire.

S. I. R.

THE partnership of Temple & Burrows has been terminated by the retirement from practice of Parke T. Burrows; the present practice, it is announced, is to be carried on under the name of Seth J. Temple, with offices in the Union-Davenport Bldg., Davenport, Iowa.

[1] *Some Manchester Streets.* By C. H. Reilly. University of Liverpool Press.

Obituary

Albert Held

Elected to the Institute in 1913
Died at Portland, Ore., 28 June, 1924

Albert Held was born at New Ulm, Minn., in 1866. He took a special course in architecture at the University of Minnesota, and went to Spokane, Wash., in 1899. He had been practicing his profession continuously from 1891 up to the time of his death. He was the first member of the Institute in Spokane.

Benjamin Emanuel Winslow

Elected to the Institute in 1915
Died at Chicago, 14 November, 1924

Benjamin Emanuel Winslow, an honored member of the CHICAGO CHAPTER, was born in Chicago on 2 July, 1867, the son of Rev. Wilhelm and Christiana Winslow. When he was about ten years of age the family returned to its former home in Copenhagen, Denmark, where he received his education, attending the Royal Academy, and graduating as an architectural engineer. At the age of twenty-one he returned to America, and later his parents also came.

Mr. Winslow's professional work as an engineer and architect, except for a few years in private practice and his association with Holabird & Roche, was in public service. He was for fifteen years Engineer for the Board of Education, and for ten years he was Engineer in the Building Department of the City of Chicago, which position he occupied at the time of his death. He is survived by his widow and a daughter. He also leaves a brother, Dr. Thomas Winslow, of Oakland, California, and a sister, Mrs. Mary Johnsen, of Los Angeles, California.

Mr. Winslow was a member of the Illinois Society of Architects, the American Society of Civil Engineers, the Danish Old Peoples' Society and the Dania Society. His membership in the CHICAGO CHAPTER of the Institute dates from 1915.

He was the author of the Winslow Engineering Tables and the Winslow Slide Rules for calculating beams and reinforced concrete, and of many engineering formulæ, and at the time of his death was engaged in gathering data on the bearing capacities of soils.

Mr. Winslow was an indefatigable worker—considering no time too long to spend for the sake of accuracy. Generous of his time and talents, he gave freely of both, with no thought of pecuniary reward. He leaves a record of high attainments in his professional work and an enviable reputation as a man of high ideals, of altruistic motives and of the highest integrity.

H. WEBSTER TOMLINSON.

S. Breck Parkman Trowbridge, F.A.I.A.

Elected to Associate Membership in the Institute in 1901
Elected to Fellowship in 1906
Died at New York City, 29 January, 1925

(Further notice later)

Arnold W. Brunner, F.A.I.A.

Elected to Fellowship in the Institute in 1892
Died at New York City, 14 February, 1925

(Further notice later)

The Allied Architects Association of Los Angeles—VIII

THE PLANNING of the Museum of History, Science and Art for the County of Los Angeles has called for resourcefulness on the part of the Allied Architects' Association of Los Angeles. The problem demanded special knowledge and experience in its many technical phases. To meet this, the varied practice and interests of the members brought to light new ideas and attributes.

It is characteristic of the Association that the sixty-nine members cover a field of prominence in the profession; individually the Association is represented in the membership of many technical associations and committees; collectively it enjoys a definite standing in the community. In a special planning problem such as a Museum or other specialized public building, this broader point of view and fund of detailed knowledge has been of inestimable value.

The new Museum now partially constructed had peculiar and interesting requirements. Its first consideration involved the preservation of the existing Museum building, which, adequate and satisfactory in the year 1910, was clearly outgrown by the demands of 1925; and so the architects were called to design an additional floor area approximately thirteen times the floor area of the initial building. To attain the final structure, a happy solution was found by spinning the web of the new building, cocoon-like, around the old.

Following the usual Association procedure, a tentative schedule of requirements in sketch form was prepared in consultation with the Director of the Museum. This was sent out to the members of the Association with a written program asking for their coöperation and ideas in sketch form. The first set of sketches submitted by members showed a distinct variety in architectural type and a distinct grouping of basic principle of plan in two classifications. These two radically divergent key plans were tentatively accepted for further development and a short time later, after 19 new sketches had been made, an open meeting was called, which was attended by members, county officials, and the Director and Board of Governors of the Museum. At this meeting each member presented his sketch and gave his reason for his solution of the problem. Such a discussion readily resulted in a candid expression of opinion from all interested parties with the result that a very definite decision as to plan was reached. It was not, however, until nine such groups of sketches were submitted and thoroughly criticized that the final parti was determined.

Because of its sympathetic adaptability, the late Italian Renaissance became the basic motive and the progenitor in type of the finished design. Perhaps it was a further study of the Italian precedent which finally developed a building reminiscent of the well-known Florentine Galleries. This is particularly apparent on the east and west elevations, where the wall behind the colonnade is set back to form an open air sculpture gallery quite suggestive of the Loggia dei Lauzi.

The most unusual part of the work has been the study given to the preservation of the perishable exhibits such as stuffed animals. Each group is housed in a glass booth, the background and surroundings of which have been painted and built up to reproduce exactly the native environment of the animals. The booths are practically air tight and the temperature inside is so controlled that a constant point, near freezing, may be maintained at all times, thus insuring the furs against any damage by moth or vermin.

Weeks of time were spent in the preliminary survey of the best museums in the country. An investigating committee of six members of the Association visited seven museums in as many cities, extending as far east as New York and Washington. Careful study was made of each feature entering into the problem. All modern improvements were considered by a special Jury and numerous authorities consulted. The Los Angeles Chapter of the Illuminating Engineering Society was retained by the architects to review and pass upon the illuminating effects and in order to cover this phase of the design in the most comprehensive manner one illumination expert was sent to eastern cities on a special visit to examine the lighting in the modern museums and galleries. The best available advice on acoustics was secured and from a multitude of sources information has been obtained regarding special material and apparatus.

Perhaps the most salient lesson taught in this museum problem has been the innumerable advantages to the client of a broad, collective service such as a professional alliance of many minds and many forces must give. The tremendous fund of data that can be made available is but one of its many resources. Time, an essence in every contract, can be almost annihilated when necessary. It would be most unusual, if not unique in the annals of individual effort, to afford the possibility that seven experts cross the continent on a tour of inspection. Collective effort must bring collective affiliations, where each member, each society, and each authority is a ready and willing consultant, pouring into the lap of common interests the best physical and mental endeavor. Such collective service, instead of resulting in the death of individuality, serves rather to stimulate each and all by association in which practical idealism can be and has been lifted above the limitations nature has set for the individual and brought it closer to the realm of pure art and architecture.

Structural Service Department

LEROY E. KERN, *Technical Secretary*

In connection with the work of the Committee on Structural Service of the American Institute of Architects and in collaboration with other professional societies and organized bodies having the same objective—improvement in building materials and methods and better shelter for humanity in all its manifold vocations and avocations

Abstracts

Hydrated Lime (3c3). (*Bulletin* 311 *of the National Lime Association. "Hydrated Lime Makes Concrete More Workable." Pages* 15. *Size, 6" x 9".*) The use of hydrated lime in concrete is neither new nor novel, and the information given in this bulletin is based on the data and experience of widely recognized concrete authorities.

MAXIMUM RECOMMENDED ADMIXTURES OF HYDRATED LIME FOR IMPROVING WORKABILITY OF CONCRETE

Mix	*Percentage of Lime by Weight of Cement*
1.1½.3	5
1.2.4	8
1.2½.5	10
1.3.6	12

As a sack of Portland cement is commonly considered as weighing 100 pounds and containing one cubic foot, the above percentages should be regarded as indicating the number of pounds of hydrated lime to be added to each sack of cement used in the batch. The following approximate field measurements will be found useful on the job:

HANDY MEASUREMENTS

Size of Pail	*Struck Capacity Lbs. of Hydrate*
4-quart	5
6-quart	7½
8-quart	10
10-quart	12½
12-quart	15
16-quart	20
20-quart	25

Where possible, measuring hoppers should be used, and the lime added at the same time as the aggregates. Where the size of the mixer or bath warrants it either whole or half bags of lime should be used for the sake of convenience, even though it requires a slight change in the actual amount of percentage of lime added.

Plain Concrete for Farm Use (4). (*U. S. Department of Agriculture, Farmers' Bulletin, No.* 1279, *by T. A. H. Miller, Bureau of Public Roads. Pages* 27. *Size, 6" x 9". Illustrated.*)

Contents. Materials. Proportioning the materials. Quantities of materials required. Consistency. Estimating. Forms. Mixing. Placing. Care of concrete. Protection from freezing. Contraction and expansion joints. Lintels. Surface finish. Concrete exposed to fire. Water-tight concrete.

Tests on the Hydraulics and Pneumatics of House Plumbing (29c). (*University of Illinois, Engineering Experiment Stations. Bulletin No.* 143, *July,* 1924, *by Harold E. Babbitt. Pages* 80. *Size 6" x 9". Illustrated.*)

Purpose and Scope. The tests herein reported were undertaken to obtain definite information concerning the positive and negative pressures found in soil-stacks, waste pipes, traps, and vent pipes, and the limitations of rates of discharge and the capacities of waste pipes and soil-stacks. The investigation thus involved a consideration of the hydraulics and pneumatics of different parts of plumbing systems. In the tests various diameters, lengths, and arrangements of pipes, traps, and vents were used. The discharges, velocities, and pressures were varied in such a way as to permit the study of the actions under a variety of conditions.

The study was directed primarily toward the solution of problems connected with the design of waste and vent pipe for a one, two, or three-story residence. In the course of the tests other information applicable to plumbing design has been gathered, and some of the data and conclusions are as applicable to tall buildings as to residences. It is believed that the results of the tests and the principles established will be helpful when making designs of plumbing installations, and in reducing the complication and cost of plumbing work.

The principal problems studied were the proper type and capacity of vents for various conditions, the causes of and methods of preventing self-siphonage of traps, the capacity of soil-stacks, and the effect on the pressures in a plumbing system resulting from (a) closing the top of the soil-stack, (b) mixing solid matter with the discharge from water closets, (c) changing the length of the horizontal pipe in the basement to which the soil-stack is connected, (d) changing the height of fall in the soil-stack, (e) changing the rate of discharge, (f) the use of a house trap, and (g) submerging the outlet from the plumbing system, as may happen when the water in the street sewer rises above the outlet of the house-sewer or when roof water, discharging into the house-drain, overcharges it.

Conclusions. In drawing conclusions it has been assumed that vent pipes and connections are wholly open and free from obstruction and that the design of the plumbing system is such that partial or complete closure through the lodgment of grease or other materials is improbable.

The maximum change of level of the water in a trap, resulting from the application of pressure, is approximately the same for all diameters of traps, provided the trap is sufficiently large to render negligible the effect of friction in retarding the movement of the water. The minimum diameter of trap to satisfy this condition seems to be about one inch. Above this size the diameter does not appreciably affect the change of level of the water and, therefore, does not affect the pressures read.

For practical purposes in plumbing design the change of level of the water in traps will be the same under the same applications of pressure, regardless of the depth of water in the trap. Therefore, the depth of water in the trap will not affect the pressures read.

The withdrawal of water from a trap will not weaken its resistance to the passage of air through it, provided the volume of water remaining in the trap is sufficient to fill the connection between the two legs of the trap, and to form a vertical column of a height equal to the depth of seal in that leg of the trap in which the water rises. This conclusion has no bearing on the strength of trap seals to resist self-siphonage.

The resistance of a trap to the passage of air through it (breaking of the seal) varies directly with the depth of the seal.

For safety in plumbing design it should be assumed that a water-closet other than the automatic valve type, which

was not tested, may discharge at the rate of 50 gallons per minute for 7 seconds. This is equivalent to a total discharge of about 6 gallons. Ordinarily a water-closet will discharge a smaller amount at a slower rate.

The positive pressure in unvented traps varies as the five-halves power of the height of fall of water to the point of observation. Neither positive or negative pressures will be produced above the point of entrance of water to the soil-stack. The negative pressure is dependent both on the vertical distance the water falls to the point where the negative pressure is measured and on the vertical fall below this point. The greatest positive pressure is greater than the greatest negative pressure anywhere in the soil-stack.

The maximum rate at which water will flow down a 4 inch soil-stack without creating uncontrollable pressure in a plumbing system is high. A 4 inch soil-stack will probably take all of the water that would be delivered to it in a five-story building, a 3 inch soil-stack will probably take all of the water that would be delivered to it in a three-story residence, and a 2 inch pipe is unsuitable to be used as a soil-stack.

The rate at which one horizontal waste pipe of the same diameter as the soil-stack will discharge water into a soil-stack through a sanitary T without backing up in the waste pipe may be taken to be as follows—2 inch soil-stack, 25 gallons per minute for 7 seconds; 3 inch soil-stack, 50 gallons per minute for 7 seconds; and 4 inch soil-stack, 100 gallons per minute for 7 seconds.

The submergence of the house-drain results in a material increase in the pressures created in a plumbing system. The submergence should be avoided in design when possible, but where unavoidable, the venting of the house-drain or the house-sewer at a point above the highest level of water backing up in the house-drain or the house-sewer will give relief.

The effect of the length of the house-drain on the pressures in a plumbing system need not be considered in plumbing design.

If a house-trap, either vented or unvented, is used at the end of the house-drain the pressures throughout the plumbing system are increased. It is, therefore, concluded that a house-trap should not be used in a plumbing system.

The closure of the top of the soil-stack or the closure of vent pipes will result in such increases in pressure as to endanger the seals in traps. Soil-stacks and vent pipes should, therefore, be designed to prevent the possibility of becoming stopped up. This is in accord with good practice in plumbing design.

The length of a 4 inch connection between a trap and the soil-stack does not affect the pressure on the trap caused by water falling down the soil-stack for traps not more than 25 feet from the soil-stack. No tests were made on traps at a greater distance from the soil-stack.

Continuous or crown venting and loop venting are equally effective in relieving the pressures created in traps by water falling down the soil-stack.

It is reasonably safe to use unvented traps, of any style, with a 2 inch depth of seal in one-story or two-story residences containing a single bath room and the normal number of kitchen and laundry fixtures connected to one 3 inch soil-stack if precautions are taken as listed.

The resistance of a trap to self-siphonage is increased by impeding the flow of water through the trap. This can be done by putting baffles in the trap, causing vortices, roughening the sides of the trap, and by other means.

The resistance of a trap to self-siphonage varies with the depth of seal in the trap, other conditions remaining unchanged. Doubling the depth of seal will double the negative pressure required to break the seal.

The negative pressure produced in a trap when water is discharging through it varies with the rate of discharge provided all other conditions remain unchanged.

The negative pressure produced in a trap when water is discharging through it varies with the drop in the discharge pipe, provided all other conditions remain unchanged. Some negative pressure is produced with no drop in the waste pipe; hence, doubling the drop will not double the negative pressure produced.

The negative pressure produced in a trap by self-siphonage is independent of the length of vertical pipe between the trap and the fixture provided the rate of discharge remains constant. An increase in the length of this pipe will ordinarily increase the rate of discharge, which will result in an increase of the negative pressure produced in the trap.

The destruction or weakening of the seal of the trap can be prevented by venting. The destruction or weakening of the trap seal by self-siphonage will be prevented when the fixture is so constructed that after the seal of the trap has broken sufficient water will fall into the trap to restore the seal.

The discharge of one water-closet will not force the air through 2 inch seals in unvented traps on fixtures connected to the same 4 inch horizontal waste pipe between the soil-stack and the discharging water-closet.

The discharge of one water-closet will not force the air through 2 inch seals in unvented traps on fixtures connected at points on the same 4 inch horizontal pipe farther away from the soil stack than the discharging water-closet.

Black Walnut (19a21). (*U. S. Department of Agriculture, Farmers' Bulletin No.* 1392, *by Wilbur R. and C. A. Reed. "Black Walnut for Timber and Nuts." Pages* 30. *Size, 6" x 9". Illustrated.*) The wood of black walnut, or "American" walnut, as it is commonly called to distinguish it from Circassian walnut, possesses a rare combination of desirable qualities which makes it a premier cabinet wood. It is relatively free from warping, checking, or splitting when alternately wet and dry, it works easily, and is durable in the presence of wood-decaying fungi and insects. It is hard, heavy, moderately straight-grained, stiff and strong and takes a high polish.

The old walnut furniture was built mostly of solid pieces, of the dark colored and close-ringed wood from forest-grown trees. Recently the demand has been strong for richly figured walnut furniture made with veneers from fast grown, wide ringed, lighter-colored, and coarse grained wood. Large stumps and logs from trees grown in the open, rather than forest-grown walnut, yield this kind of wood. With the increasing scarcity and value of the wood, the sapwood is being stained by steaming and accepted equally with the heartwood.

Synopsis. Range and Supply. Where walnut grows best. Related Species. Black walnut hybrids and their uses. Growing black walnut for timber. Growing black walnut for nuts. Sources of information and planting stock.

A Street in Quimperlé, Brittany
Celestino-Celestini